Five-Year Review Report

First Five-Year Review Report
for the South Point Superfund Site
Lawrence County, Ohio

May 5, 2006

PREPARED BY:

United States Environmental Protection Agency
Region 5
Chicago, Illinois

Approved by:

Richard C. Karl, Director
Superfund Division

Date:

5-8-06

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List of Acronyms

AR	Administrative Record
AOC	Administrative Order on Consent
ARARs	Applicable or Relevant and Appropriate Requirements
BLRA/BRA	Baseline Risk Assessment
CC	Construction Completion
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COCs	Contaminants of Concern
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
GEOS	Groundwater Evaluation and Optimization System
GPM	Gallons Per Minute
HI	Hazard Index
ICs	Institutional Controls
LEDC	Lawrence Economic Development Corporation
MCLs	Maximum Contamination Levels
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
O&M	Operation and Maintenance
OU	Operable Unit
PA	Preliminary Assessment
PRPs	Potentially Responsible Parties
RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SI	Site Inspection
SVOC	Semi-volatile Organic Compound
TBC	To Be Considered
UAO	Unilateral Administrative Order
VOC	Volatile Organic Compound

Executive Summary

The remedies for the South Point Superfund Site (the Site) located in Perry Township, in the Village of South Point, in Lawrence County, Ohio included: institutional controls, excavation and proper on-site consolidation of contaminated soil, off-site disposal of contaminated soil, the placement of a dual barrier cap, with consolidation of Disposal Area D into the Eastern Disposal Area, surface control for the Northern Fly Ash Ponds, pumping contaminated groundwater to remove contaminant mass, containment, and groundwater monitoring.

The trigger for this Five-Year Review is the actual Remedial Action (RA) on-site construction date of May 2, 2001.

The assessment of this Five-Year Review found that the remedy at the Site is protective of human health and the environment because threats at the Site have been addressed through excavation, on-site consolidation and off-site disposal of contaminated soil, capping of contaminated soil, groundwater's containment and contaminant mass removal, installation of fencing and warning signs, and implementation of institutional controls.

Five-Year Review Summary Form

Site name *(from WasteLAN)*: South Point Superfund Site		
EPA ID *(from WasteLAN)*: OHD0716500592		
Region: 5	**State:** OH	**Village/County:** Village of South Point / Lawrence County
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☐ Under Construction ☒ Operating ☒ Complete		
Multiple Operable Units (OU)? ☐ YES ☒ NO	**Construction completion date:** May 9, 2003	
Has site been put into reuse? ☒ YES ☐ NO		
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency		
Author name: Nabil Fayoumi		
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA, Region 5	
Review period: January, 2006 through May, 2006		
Date of site inspection: April 19, 2006		
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion)		
Review number: ☒ 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify)		
Triggering action: ☒ Actual RA On-site Construction ☐ Actual RA Start at OU# ___ ☐ Construction Completion ☐ Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date *(from WasteLAN)*: May 2, 2001		
Due date *(five years after triggering action date)*: May 2, 2006		

Five-Year Review Summary Form, cont'd.

Issues:

- Coke fines from the nearby Allied Chemical and Ironton Coke Superfund Site were transported to Biomass Energy LLC (Biomass) at the Site, and these coke fines were to be used as an alternative fuel source for an incinerator. Biomass has not yet received a permit to operate their proposed incinerator and the coke fines are stored in a gutted building at the Site which doesn't provide protection from wind erosion and precipitation.

- The existing Institutional Controls (ICs) at the Site were recorded prior to performance of the remedial activities at the Site in 2001. At that time, the exact dimensions and location of the cap over the Eastern Disposal Area and the surface controls of the Northern Fly Ash Ponds were not known. Enhancement of the existing ICs can be performed by recording of the exact locations of these areas in the deeds for the properties on which they appear. The Eastern Disposal Area Landfill and the Northern Fly Ash Ponds are located on two parcels owned by Biomass Group, and on portions of Tract owned by LEDC. This will provide Honeywell and LEDC more flexibility redeveloping their portion of the Site for industrial purposes.

- The existing ICs for groundwater use do not reflect the existence of performance standards for groundwater at the Site. Performance standards were specified in the ROD. ICs need to incorporate a provision allowing the parcel owner to petition U.S. EPA to remove groundwater use restrictions once the performance standards set forth in the ROD have been fully implemented.

- The existing monitoring requirements in the O&M Plan are adequate to ensure that the ICs are maintained in the short term and the long term. However, the plan does not contain an annual certification to the United States Environmental Protection Agency (U.S. EPA) that ICs are in place and remain effective nor are the O&M Reports provided to current landowners. U.S. EPA will ask Honeywell to modify its O&M plan to include this annual certification, and also require that information relevant to land use restrictions is provided annually to current landowners.

- In reviewing the IC Study Report, it appears that there are some parcels within the Site that are not subject to the groundwater usage restriction (Grantees 2, 3, and 4; the report indicates that those parcels were transferred back in the mid-80s, and therefore the deeds do not fall under the restrictions). These are zoned industrial and should a user install a well for industrial purposes, its hydraulic impact could affect the existing capture zone.

- The "covenants" which have been recorded are notices of the environmental restrictions only, and are not proprietary interests. U.S. EPA will seek to work with Honeywell to implement

proprietary interests, such as covenants under the Ohio version of the Uniform Environmental Covenants Act, on all affected Site parcels.

- U.S. EPA's Groundwater Evaluation and Optimization System (GEOS) Team performed an independent analysis of the groundwater data as part of this review. While the capture zone appears adequate, GEOS recommended that the system can likely be optimized, but this will require further study.

- LEDC inquired about redeveloping their portion of the Northern Fly Ash Ponds for cargo container storage. In addition, LEDC expressed an interest in the Agency's national redevelopment awards and inquired as to how their work can be considered for such an award.

Recommendations and Follow-up Actions:

- The Ohio Environmental Protection Agency (Ohio EPA) is in the process of an enforcement action against Biomass to enforce a Consent Order in which Biomass agreed to provide proper disposal of the coal/coke. Biomass has not yet complied. U.S. EPA will provide appropriate support to Ohio EPA as needed.

- U.S. EPA will request that Honeywell prepare an IC Plan within six months of the date this Five Year Review Report is signed to address the IC issues identified:
  (1) Revise deeds to show the exact locations of the Eastern Disposal Area and Northern Fly Ash Pond;
  (2) Revise groundwater IC's at the time the ROD's performance standards are met; allowing the parcel owner to petition U.S. EPA to remove groundwater use restriction.
  (3) Incorporate an annual certification step to the O&M Plan and provide copies of the reports to the current landowners;
  (4) Honeywell shall work with the current owners of parcels 2, 3, and 4 and the Village of South Point to place the appropriate groundwater usage restrictions on these parcels. U.S. EPA will assist Honeywell as appropriate and necessary; and
  (5) The plan shall include IC maps (paper and GIS formats) to identify the Site and all areas subject to restrictions.
  (6) (A)Explore feasibility of implementing covenants under the Ohio version of the Uniform Environmental Covenants Act for as many parcels as possible. (B) Examine the extent to which LEDC and Honeywell are required to notify U.S. EPA prior to the transfer of Site parcels, and contact them about placing appropriate restrictions when transfers of land occur.

- U.S. EPA will work with Honeywell on potential optimization strategies for the groundwater capture system as recommended in the GEOS Report.

- U.S. EPA and Honeywell will work with LEDC on issues related to redeveloping their portion of the Northern Fly Ash Ponds for cargo container storage. U.S. EPA's Remedial Program

will communicate with the Regional Redevelopment Coordinator to discuss the potential for the LEDC portion of the Site to be nominated for a national redevelopment award.

Protectiveness Statement:

The remedies at the South Point Site are protective of human health and the environment in the short-term because threats at the Site have been addressed through capping, maintaining inward hydraulic gradients, maintaining an adequate groundwater contaminant capture zone, installation of fencing and warning signs, and implementation of institutional controls (deed restrictions); however to assure the remedy is protective in the long-term, the covenants in the deed need to be amended to clarify the area subject to "restrictions."

Other Comments:

None.

SOUTH POINT ALLIED SUPERFUND SITE
LAWRENCE COUNTY, OHIO
FIVE-YEAR REVIEW REPORT

I. INTRODUCTION

The purpose of the Five-Year Review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and identify recommendations to address them.

The U.S. EPA is preparing this Five-Year Review Report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

U.S. EPA interpreted this requirement further in the NCP. 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

U.S. EPA, Region 5, conducted the Five-Year Review of the remedy implemented at the Site in Lawrence County, Ohio. This review was conducted by U.S. EPA in consultation with Ohio EPA from January, 2006 through May, 2006. This report documents the results of the review.

This is the first Five-Year Review for the Site. The triggering action for this statutory review is the actual RA on-site construction date of May 2, 2001. This Five-Year Review is required because hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

II. SITE CHRONOLOGY

Event	Date
Site brought to attention of U. S. EPA	June 1981
Site Proposed for listing on NPL	September 1983
Site was added to the NPL	September 21, 1984
RI/FS Administrative Order on Consent	April 1987
Baseline Risk Assessment	February 1993
Remedial Investigation	August 1994
Feasibility Study	June 1997
Record of Decision Signed	September 1997
RD/RA Consent Decree Signed	September 16, 1998
Submittal of Remedial Design Work Plan	December 1998
Begin Pre-Design Investigation	February 1999
Submittal of Final design Report incorporating responses to agency comments contained in January 23rd letter	March 28, 2001
Pre-Construction Meeting and Orientation meeting with local Response Agency held. Contingency Plan presented	May 2, 2001
Construction begins with Mobilization to Site and Temporary Facility Construction	May 2, 2001
Final Inspection	December 12, 2001
Completion of the Preliminary Close Out Report	December 21, 2001
Approval of Construction Completion Report	May 09, 2003

III. BACKGROUND

Physical Characteristics

The Site is located in Perry Township, in the Village of South Point, Lawrence County, Ohio (Map 1). The Site, which covers approximately 610 acres, is located on a relatively flat portion of an Ohio River terrace within the eastern flood plain of the Ohio River. The Site is located at an average elevation of 560 feet mean sea level (msl). Along the eastern side of the Site, Solida Creek, a small intermittent stream, flows from southeast to northwest. A small tributary to Solida Creek, Willow Creek, joins it east of the Site. Solida Creek, Willow Creek, and the Ohio River represent the natural surface-water draining within the Site. The Ohio River Flows Northward in the vicinity of the Site, and ultimately southwestward toward the Mississippi River.

The Site is situated on a relatively uniform silt and fine sand unit which is generally 7 to 10 feet thick, and is comprised of 50 to 60 percent silt, 30 to 40 percent clay, and 10 percent sand. Underlying these surface sediments is 70 to 100 feet of unconsolidated, alluvial, and glacial outwash sediments which rest on bedrock. These sediments comprise the principal aquifer of the area. Groundwater in the aquifer is present under unconfined conditions and is found at an average depth-to-water of 45 feet. In general, groundwater flows toward the Ohio River.

Land and Resource Use

The Site is located in the Village of the South Point, Lawrence County, Ohio. The Site is located between U.S. Route 52 to the east and the Ohio River to the west. The Site's western boundary includes 5,000 feet of Ohio River frontage. Solida Creek, a small stream, runs along the Site's eastern and northern boundaries, paralleling U.S. Route 52.

The Site is surrounded to the north and south by residential properties, commercial properties, agricultural areas, and a little league field. U.S. Route 52 runs along the Site's eastern boundary while Country Road 1 separates the Site's western river frontage from the remainder of the Site. The Site is not zoned - the Village of South Point's commercial, industrial, and residential districts do not extend beyond the downtown area, located adjacent to the Site's southern boundary. A deed restriction and restrictive covenants placed on the Site restrict the Site's uses to commercial and industrial uses.

In 1999, a portion of the Site owned by SPE was purchased by the Biomass Group, LLC. Biomass, Inc., owns 14 noncontiguous parcels of land at the Site totaling 80 acres. Biomass has tentative plans to open a wood/sawdust burning plant in the near future. In 2001, portions of the Site still owned by Ashland were sold to the Lawrence Economic Development Corporation (LEDC). The LEDC is developing an industrial park called The Point on its property. In addition, portions of the Site have been leased for Agricultural purposes. The Site's selected remedy - institutional controls, soil excavation and disposal, on-site containment and consolidation, and the continued pumping, testing,

and discharge of the Site's groundwater into the Ohio River - directly addressed the soil and groundwater contamination in these portions of the Site.

In 2003, U. S. EPA issued Ready for Industrial Reuse (RfR) determination for the parcels of land at the Site that are owned by the LEDC. This RfR determination provided that U.S. EPA made a technical determination that LEDC-owned parcels at the Site were ready for industrial reuse and that the Site remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations as specified in the ROD, other response decision documents, and the land title documents. This RfR determination remains valid only as long as the requirements and use limitation specified in the ROD and the land title documents are met.

Limitation on Site uses in the ROD include the following: groundwater may not be used for purposes other than monitoring and remediation and Site activities shall not interfere with the Site remedy and long-term groundwater monitoring program. No use or public access is allowed on the fenced and capped southern portion of the Site's Eastern Disposal Area. The fly ash deposits in the Site's Northern Fly Ash Ponds must remain stabilized. U.S. EPA and Ohio EPA shall be provided access to the Site for operation and maintenance, and inspection activities. The components of the remedy requiring ongoing operation and maintenance are: quarterly inspection of the Eastern Disposal Area's cap and fencing, erosional controls at remediated areas, surface stabilization controls at the Northern Fly Ash Ponds, and long-term monitoring. Honeywell, Inc. is responsible for the continuing operation and maintenance of the remedy at the Site.

History of Contamination

The Plant was constructed in 1943 by the federal government for the production of ammonium nitrate explosives. In 1946, Allied Chemical purchased the plant and produced ammonia, urea, nitrogen fertilizer solution, melamine, formaldehyde, and urea formaldehyde mixtures until 1978. Ashland Oil company purchased the facility in 1979. Subsequent to the purchase of the Plant, Ashland demolished and removed many of the plant structures and constructed a coal-water fuel pilot plant and a pitch prilling test plant that formed pitch into small pellets. Both the pilot plant and test plant have been dismantled. In 1981, South Point Ethanol, Inc. (SPE) acquired an 80-acre tract in the middle of the former production area for ethanol production. In 1985, Cardox, a division of the Air Liquide Corporation, began leasing a portion of the SPE tract for liquid carbon dioxide production. SPE and Cardox discontinued operations in August 1995. Air Liquide continued to use the site for liquid carbon dioxide storage and transfer until January 1997.

Site waste disposal units were used for the disposal of various process wastes and general Plant trash generated during production activities from 1943 to the mid-1980s and include the Northern Fly Ash Pond, the Eastern Disposal Area, Disposal Area D, and the Melamine Ponds. These areas reportedly received Plant refuse coal cinders, small quantities of laboratory chemicals, asbestos-insulated material, waste lubrication oils, and by-product and off-specification solids such as ammonium nitrate, urea, and melamine.

Other on-site facilities and/or activities that, through normal operating procedures, could have introduced contamination into the environment include drip pots along a coke-oven gas line, reactors and associated iron oxide catalysts; waste lubrication oil disposal activities; and arsenic trioxide packaging disposal activities.

Four (4) major releases occurred during the plant operation which were the result of:

1) a mid-1950s fire in the fertilizer production building which released nitrogen-based compounds,

2) a tank rupture of 80 percent ammonium nitrate solution in November 1971 which released approximately 400,000 gallons in the mid-plant area grounds and storm sewer system,

3) A November 1977 dike failure along the northern edge of the Northern Fly Ash Ponds which released fly ash and cinders into Solida Creek, and

4) a February 1978 Melamine Pond dike failure which resulted in the release of an estimated 100,000 gallons of pond liquids.

U.S. EPA sampling at the Site in 1998 indicated that the groundwater underneath the Site was contaminated. Contaminants of concern found in the Site's soils and groundwater included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), waste specific compounds (ammonia, nitrate/nitrite, and sulfate), and metals (arsenic, barium, beryllium, cadmium, copper, and selenium).

Initial Response

The Plant was placed on the NPL in September 1984. This assignment was made at the request of Ohio EPA, based upon the results of investigations conducted between 1981 and 1984. These investigations indicated the existence of groundwater contamination and its off-site migration, potentially posing a threat to human health and the environment.

A remedial investigation and feasibility study (RI/FS) was conducted by AlliedSignal, Inc., pursuant to an Administrative Order on Consent (AOC) signed on May 1, 1987 between AlliedSignal, Inc., Ashland Oil Inc., and Ashland Ethanol, Inc. (South Point Ethanol, Inc.); and U.S. EPA Region V and the Ohio EPA. Following completion of the RI and FS in 1997, a Record of Decision was issued in October 1997, and a Consent Decree (CD) was entered in 1998 for the performance of the Remedial Design and Remedial Action (RD/RA).

All of the potential remedies considered for the Site assumed that the likely future reuse of the Site would be for industrial purposes.

The Site's selected remedy included institutional controls, soil excavation and disposal, on-site containment and consolidation, and continued pumping, testing, and discharge of the Site's groundwater into the Ohio River to address the soil and groundwater contamination.

Contaminated soils were placed under a dual barrier cap on a portion of the Eastern Disposal area, a 13-acre Area on the Site's eastern edge. The Site's groundwater is being pumped, tested, and discharged into the Ohio River under a site-wide NPDES permit. U.S. EPA's remedial goals for groundwater are long-term and have not yet been achieved.

The remedial design for the Site included a modification to the remedy selected in the ROD. The remedy originally required the placement of single-barrier caps on portions of both Disposal Area D and the Eastern Disposal Area. In 1998, Allied Signal (now Honeywell, Inc.) requested that contaminated soils and waste from Disposal Area D be consolidated under a dual-barrier cap located in the south portion of the Eastern Disposal Area. Disposal Area D would then be backfilled with clean soil. U.S. EPA approved the remedy modification request and designated the modification as a minor alteration to the ROD.

Once U.S. EPA approved the work plan for the Site's remedial design in March 2001, remedial action to address soils and groundwater contamination at the Site were initiated in May 2001. The Site's remediation took eight months and was completed in December 2001. A Preliminary Closeout Report was issued by U.S. EPA in December 2001 and a revised Construction Completion Report was completed in May 2003. The Site's Final Closeout Report will be issued by U.S. EPA after the Site's groundwater remedial goals have been met.

Basis for Taking Action

Soils

One Hundred and ninety-nine soil samples were obtained from 69 onsite locations, including 9 background locations. The soil samples , both surface soil and soil borings, were from the following areas: the Northern Fly Ash Ponds, the Eastern Disposal Area, Disposal Area D, the Mid-Plant Area, and the Coke Oven Gas Blowdown Area. These were the primary areas of suspected soil contamination. Contaminations found in these areas include volatile organic compounds (VOCs and semi-VOCs), waste specific compounds (ammonia, nitrate/nitrite, and Sulfate), and metals (arsenic, barium, beryllium, cadmium, copper, and selenium). Cyanide was also found in the Coke Oven Gas Blowdown Area. Contaminants were concentrated within 10 feet of the surface and decreased rapidly as depth increased.

Groundwater

Groundwater samples were taken from 10 monitoring wells, 7 production wells, 3 residential wells (two north of the Site and one south of the Site), 3 observation wells, and 2 municipal wells located near the Ohio River. Analytical results indicated that groundwater quality has been affected by the

Eastern Disposal Area, Disposal Area D, the Mid-Plant Area, and the Northern Fly Ash Ponds. Exceedances of drinking water standards or primary MCLs are restricted to cadmium and nitrate/nitrite levels. Cadmium levels also exceeded the MCL in background samples. Other constituents, primarily sulfate, iron, and manganese, exceeded groundwater quality standards, or secondary MCLs. Some high levels of ammonia were also found in groundwater. In addition, there were two areas with high values of total dissolved solids (TDS) and high specific conductance. TDS and specific conductance are two indicators of groundwater quality. The first area is centered on the northern part of the Northern Fly Ash Ponds immediately adjacent to Disposal Area D. The second area extends from the Eastern Disposal Area into the Mid-Plant Area.

Prior to the start-up of SPE operation at the site in 1981, there had been evidence that the Village of South Point's municipal wells may have been affected by the groundwater contamination at the site, particularly nitrate/nitrite contamination. Some of the city's wells were located between the site and the Ohio River. SPE installed a number of groundwater wells to pump water for cooling off ethanol production lines and for use in some industrial processes. Excess water from the industrial process was treated, mixed with non-contact water, and discharged through an Ohio EPA National Pollutant Discharge Elimination System (NPDES) permit into the Ohio River. These wells effectively contained groundwater under the site and when in use, they have eliminated the potential for contaminated groundwater to affect the city's municipal wells. Part of this existing containment system, namely SPIS-23 and SPIS-24, continued pumping as part of the remedy to ensure the city's wells are not affected. In addition, the NPDES permit has been kept up to date and is in compliance with Ohio EPA's requirements.

Surface Water and Sediment

Six surface water and six sediment samples were obtained during the RI. Background samples were collected from Solida Creek and an adjacent creek upstream of the Site. The data indicated that there was no apparent change in surface water quality as it passes through the Site, with the exception of a slight increase in lead content in one sample upstream of the Site and one on-site sample. Sediment quality results indicated that the Site did not contribute contamination to the sediments of Solida Creek.

During the RI, consideration was given to the various Site-specific pathways by which contaminants could migrate from the Site. As part of this process, surface runoff and contaminated groundwater were determined to have incomplete pathway migration. The migration pathway for surface runoff was considered incomplete because surface water and sediment data from Solida Creek was not found to be impacted. Solida Creek directly borders the disposal areas at the Site and would be considered the closest surface water body, while the Ohio River is approximately 2000 feet from the closest on-site disposal area. Groundwater at the site, while contaminated, was already being addressed by the groundwater containment system that was in place prior to the RI. As mentioned previously, the pumping system, while in operation, effectively contains groundwater under the site and removes mass contaminants. The presence of a containment system alleviated the impact of contaminated groundwater on the Ohio River. Major releases at the Site may also have impacted the Ohio River.

However, because of the short duration of these events and the time frames that had passed since the releases had occurred, the U.S. EPA determined that these events were not significant sources of contamination on the Ohio River.

A site-specific baseline risk assessment and ecological risk assessment were performed. The results of the baseline screening assessments showed unacceptable cancer risks to current on-site workers, adult trespassers, and child trespassers attributable to potential exposure to contaminated soils and groundwater. Preliminary remedial goals (PRGs) were developed for constituents of concern in the table below in soils and groundwater.

Table

Chemicals of Concern	
Soils	**Groundwater**
1,1 - Dichloroethene	Ammonia
Benzo(a)anthracene	Arsenic
Benzo(a)pyrene	Beryllium
Benzo(b)flouranthene	Cadmium
Benzo(k)flouranthene	Copper
Chrysene	Manganese
Dibenz(a,h)anthracene	Nickel
Indeno(1,2,3,-cd)pyrene	Nitrate
Antimony	
Arsenic	
Barium	
Beryllium	
Cadmium	
Chromium	
Thallium	
Vanadium	

IV. REMEDIAL ACTIONS

Remedy Selection

The remedial action selected by the U.S. EPA to address the conditions at the Site was embodied in the ROD that was executed in October 1997, and for which the State has provided its concurrence. The remedial action goals in the ROD for the Site were to minimize risks to public health and the environment from direct contact with contaminated materials and to minimize the migration of contaminants into groundwater. The ROD was supported by an administrative record file that contained the documents and information upon which U.S. EPA based the selection of the response action. U.S. EPA determined that the selected response action set forth in the ROD protects human health, welfare, and the environment, meets the requirements of all Federal and State environmental laws, and is cost effective.

The following nine criteria, outlined in the NCP at section 300.430(e)(9)(iii), were used to compare the alternatives presented in the Feasibility Study and to determine the most appropriate alternative for remediation of the soils and groundwater that is protective of human health and the environment, attains applicable or relevant and appropriate requirements (ARARs), is cost -effective and represents the best balance among the evaluation criteria. The nine criteria that were evaluated are:

- Overall Protection of human health and the environment
- Compliance with ARARs
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility or volume through treatment
- Short-term Effectiveness
- Implementability
- Cost
- Support agency acceptance
- Community acceptance

The major components of the remedy included:

Disposal and Fly Ash Area to the North

- Institutional controls
- Disposal:

  Consolidation and placement of waste from Disposal Area D in Eastern Disposal Area.
- *Waste Containment:*

  Installation of a dual-barrier cover at the Eastern Disposal Area after soil and waste from the Mid-Plant Area, the coke-oven gas blowdown areas, and Disposal Area D had been placed and consolidated.

  Installation of surface control (slope stabilization, erosion control, and enhancement of existing vegetation) at the Eastern Disposal Area and the Northern Fly Ash Ponds.

Groundwater

- Institutional controls
- Groundwater Containment:

Containment of groundwater plumes exceeding performance standards with existing pumping containment system.

- Discharge:

  Discharge of extracted water from the existing pumping containment system to the Ohio River.

A fence has been erected around the Eastern Disposal Area Landfill. The purpose of the fence is to protect the landfill cap from disturbance. Quarterly inspections of the Site as required by the Operation and Maintenance Plan are performed to ensure that the remedy remains intact and that the property continues to be used for commercial and industrial purposes only.

The estimated costs as presented in the Proposed Plan (U.S. EPA, 1997) was $3,910,800.

Remedy Implementation

The following paragraphs discuss the implementation of each aspect of the remedial action.

The 1997 ROD remedy included components as follows:

The selected remedy for groundwater as proposed by Remedial Alternative RA-5A in the 1997 U.S. EPA Proposed Plan consists of:

- Institutional controls,
- Containment through pumping of existing containment system, and
- Discharge to the Ohio River.

The remedy for soils, completed in December 2001, consisted of:

- Institutional controls,
- Excavation of wastes from Disposal Area D,
- Excavation of arsenic contaminated soils from the Mid-Plant Area,
- Excavation of the coke-oven gas line drip pots and contaminated soils,
- Consolidation of wastes within the Eastern Disposal Area,

- Construction of an onsite landfill in the Eastern Disposal Area for wastes from Disposal Area D and arsenic contaminated soils from the Mid-Plant Area having concentrations less that 400 mg/kg, and
- Offsite disposal of the coke-oven gas line drip pots and contaminated soils associated with the drip pots, and arsenic contaminated soils from the mid-Plant Area having concentrations greater than 400 mg/kg.

To characterize the Site the following methods were used. Historical information concerning Site operation was gained through a document search and the use of the historical aerial photography. Geophysical methods (terrain conductivity and borehole conductivity) were used as a survey tool to assess and confirm the placement of wastes and the vertical extent of groundwater contamination. To characterize the physical and chemical nature of the vadose zone as well as waste thickness, soil borings, surface soil sampling, geotechnical sampling, soil gas sampling and comparative studies were completed. To evaluate the occurrence, movement, and quality of groundwater, historical water quality records were examined, meteorological data obtained, Ohio River stage data gathered, monitor wells emplaced, piezometers constructed, groundwater samples analyzed, an aquifer test conducted and a groundwater flow and transport model completed. To characterize Solida and Willow Creeks, surface-water and sediment samples were collected and analyzed. To evaluate the risks to human health and the environment associated with the site, a baseline risk assessment, ecological inventory, and ecological assessment were completed.

Based on the findings of the RI, Baseline Risk Assessment, and Ecological Risk Assessment, preliminary remedial goals (PRGs) were developed for constituents of concern in soil and groundwater. The following remedial actions objectives addressed media of concern (soil and groundwater) for protection of human health and the environment as determined in the RI, Baseline Risk Assessment, and the Ecological Assessment.

Surface Soil

- Minimize potential ingestion and dermal contact of contaminated surface soils (metals, carcinogenic polycyclic aromatic hydrocarbons [c-PAHs]) in the inactive and active areas by current and future human receptors.

- Excavate arsenic contaminated surface soil in the Mid-Plant Area which exceeds the arsenic soil preliminary remedial goal to reduce the risk associated with dermal contact and ingestion of contaminated surface soils by current and future human receptors.

Soil

- Excavate drip pots and the surrounding impacted soil to reduce risk associated with dermal contact and ingestion of contaminated soils (c-PAHs associated with drip pots) in this area by current and future human receptors.

Groundwater

- Prevent ingestion of contaminated groundwater (nitrates, ammonia, metals) under the Site by future human receptors.
- Restore quality of the local groundwater under the Site.

The groundwater remediation included containment and removal of contaminant mass through contained operation of the existing system. Monitoring was conducted. PRGs established for groundwater effectively assessed the progress of the groundwater containment and the removal of mass contaminations.

For the Inactive Area, the remedy proposed a single barrier cap for the Eastern Disposal Area and Disposal Area D. Some details and clarifications have been added to the remediation of Disposal Area D that involved stabilization of the area because of its precarious locations on the slope of Solida Creek. Even though there was evidence that potential hazardous material was disposed of in the Eastern Disposal Area, the RI has determined that contaminants related to these potentially hazardous materials have been detected at only moderate and not high levels. Therefore, the remedy supported the placement of single barrier, solid waste cap, meeting solid waste ARARs, on the Eastern Disposal Area. Under this scenario, the U.S. EPA invoked the CERCLA waiver for Equivalent Standard of Performance for hazardous waste ARARs. In addition, the U.S. EPA recommended surface control for the Northern Fly Ash Pond.

For the Mid-Plant Area and the Coke-Oven Gas Blowndown Area, the remedy included excavation and off-site disposal of contaminated soil. For the Mid-Plant Area, the remedy included on-site consolidation of arsenic contaminated soils in the Eastern Disposal Area prior to capping if arsenic concentrations exceeded 40 mg/kg. If soils exceeded 400 mg/kg arsenic, then the soils would be disposed of off-site. Soil contamination in the Mid-Plant Area was to be evaluated further during the pre-design phase of the RD.

On September 3, 1998, PRPs presented U.S. EPA with a modified approach to the remedial design for Disposal Area D. The modified approach consolidated and placed waste from Disposal Area D in the Eastern Disposal Area prior to the placement of a dual barrier cover on the Eastern Disposal Area. U.S. EPA approved this approach in October 22, 1998. As part of the Preliminary Design, a geotechnical evaluation was performed to determine the stability of the remaining slopes of Disposal Area D after removal of the site wastes.

The Remedial Action Design was approved by the U.S. EPA on February 27, 2001. The Remedial Design consisted of the following Phases:

- The Pre-Design Investigation conducted in February 1999 obtained additional information on soils and other material located within the site to assist in the preparation of the Remedial Action Design.

- The Preliminary Design was conducted and the Report prepared and submitted on October 1, 1999. The Preliminary Design presented the results of the Pre-Design Investigation as well as the results of the Preliminary and Geotechnical Evaluation of the Design.

- The Pre-Final Ninety-Five Percent Design was conducted and the Report prepared and submitted to the Agencies on June 30, 2000. The Final Design Document was prepared and Submitted to the Agency on March 28, 2001.

- Remedial actions to address soil and groundwater contamination at the South Point Superfund site were initiated in May 2001. The Site's remedation took eight months and was completed in December 2001. Preliminary Closeout Report was issued in December 2001 and a revised Construction Completion Report was completed in May 2003. The Site's Final Closeout Report will be issued by the U.S. EPA after the Site's groundwater remedial goals have been met.

- U.S. EPA, with Ohio EPA concurrence, gave Honeywell approval to transport 35,000 tons of coal and coke materials that were generated at the nearby Allied Chemical and Ironton Superfund Site. Coal and coke materials were subjected to physical testing (BTU content) prior to off-site shipment to the nearby Biomass facility (at the Site) for planned consumption as an alternative fuel.[1]

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[1]The materials that were shipped to the Biomass facility still remain stockpiled and have not yet been processed in accordance with the original contractual agreement between Honeywell and Biomass. These materials were designated to serve as feedstock to fire boilers located at the Biomass facility; however, the boilers and power generation components have not been constructed to date. The un-processed materials are currently stored inside a concrete building with a concrete floor. However, the building's roof is not intact, and the walls of the building are not fully intact. The material is subject to wind erosion, and precipitation. Ohio EPA is in the process of an enforcement action against Biomass. U.S. EPA will track Ohio EPA's progress and provide assistance as appropriate.

Operation and Maintenance (O&M)

Operation and maintenance (O&M) activities for the remedial action and the groundwater monitoring program at the Site were conducted in accordance with the February 2002 Operation and Maintenance Plan and the 2001 Final Design Report (FDR) for the South Point Plant Superfund Site.

Per the O&M Plan, the cap over the Eastern Disposal Area Landfill is inspected on a quarterly basis. The surface controls at the Northern Fly Ash Ponds are inspected on an annual basis. Groundwater monitoring wells are inspected on a semi-annual basis when sampling of the wells occurs. The pumping wells of the groundwater containment system are inspected weekly, with telemetry being in place to indicate when a problem with the well occurs. The objective of the monitoring program is to assess the flow and quality of groundwater until the remedial goals for the groundwater are met.

Each inspection requires a review of ICs which are then discussed in the O&M reports. Based on review of these reports, the Site is being used in a manner consistent with the restriction of the March 24, 1999 Notice of Consent Decree, with the exception of the installation of a gravel parking area over a portion of the Northern Fly Ash Ponds. The gravel parking area was built while Biomass was illegally accepting waste tobacco. The graveled area is recovering and being recovered with renewed growth.

Monitoring Results

This Section includes groundwater elevations, groundwater flow, groundwater quality, the extracted volumes of water, extracted contaminant mass, and hydraulic containment.

Groundwater Elevations

Groundwater level data collected between March 1999 and October 2000 indicated that there is a general decline in water levels. Imposed on this general trend were two spring events (March 1999 and April 2000) which showed a slight increase in groundwater elevations and suggested that there was a seasonal aspect to groundwater elevation.

In 2001 and 2002, Wells SPIS--25, -26, and -27 appeared to be yielding anomalous water levels that may be attributable to measuring point elevation errors. These locations were to be resurveyed in 2002 to eliminate the chance that the anomalous readings could be attributable to measuring point elevation errors. Inspection of data indicated that the change in water levels varied by approximately 0.2 feet. Other wells nearby varied by nearly 2 feet over the same time period. Because of this, water levels were ignored during contouring. Lack of water-level data in this area did not compromise the monitoring effort.

In 2003, Wells SPIS--25, and -27 continued to yield anomalous water levels that may be attributable to measuring point elevation errors. Inspection of data indicated that the change in water levels between April and October varied by approximately 0.3 feet. Other wells nearby varied by nearly 2 feet over the same time period. Because of this, water levels were ignored during contouring. Lack of water-level data in this area did not compromise the monitoring effort.

Groundwater Flow

Groundwater elevation data collected in 1999, 2000, 2001, 2002, 2003, 2004, and 2005 indicated that the groundwater flow at the site is primarily to the southwest, toward the Ohio River and a large groundwater depression formed by the containment wells SPIS-23 and SPIS-24.

The hydraulic gradient of the groundwater range was 0.0025 and 0.0022 feet in April and October 2000, respectively. Based on a hydraulic conductivity of 386 ft/day and an effective porosity of 0.2, groundwater flow velocity is calculated to range from 4.2 to 4.8 ft/day.

The hydraulic gradient of the groundwater range was 0.0023 and 0.0018 feet in April and October 2001, respectively. Based on a hydraulic conductivity of 386 ft/day and an effective porosity of 0.2, groundwater flow velocity is calculated to range from 3.5 to 4.5 ft/day

The hydraulic gradient of the groundwater range was 0.0025 and 0.0023 feet in April and October 2002, respectively. Based on a hydraulic conductivity of 386 ft/day and an effective porosity of 0.2, groundwater flow velocity is calculated to range from 4.8 to 4.4 ft/day.

The hydraulic gradient of the groundwater range was 0.0022 and 0.0028 feet in April and October 2003, respectively. Based on a hydraulic conductivity of 386 ft/day and an effective porosity of 0.2, groundwater flow velocity is calculated to range from 4.25 to 5.4 ft/day.

The hydraulic gradient of the groundwater range was 0.0024 and 0.0028 feet in April and November 2004, respectively. Based on a hydraulic conductivity of 386 ft/day and an effective porosity of 0.2, groundwater flow velocity is calculated to range from 4.6 to 5.4 ft/day.

The hydraulic gradient of the groundwater range was 0.0025 and 0.003 feet in April and November 2005, respectively. Based on a hydraulic conductivity of 386 ft/day and an effective porosity of 0.2, groundwater flow velocity is calculated to range from 4.8 to 5.8 ft/day.

Groundwater flow velocity over the five year review period is consistent with the values determined during the RI.

Groundwater Quality

Concentration of ammonia, nitrate/nitrite, and manganese were reported above PRGs for groundwater collected during semi-annual monitoring events. Detail of exceedances are discussed below.

Ammonia

Ammonia was present in many of the groundwater samples analyzed and it was detected at concentrations above the site-specific PRG of 30 mg/l.

In November 2000, ammonia was detected at the concentration of 55 mg/l in well MW-7 which lies in the Mid-Plant Area. The two sampling events of year 2000 indicated, with the exception of MW-7, that it appeared that ammonia concentrations are declining in the Mid-Plant Area Plume.

Ammonia was detected at concentrations of 72 mg/l in April and 75 mg/l in October 2001 in well MW-07. Ammonia was detected at a concentration of 71 mg/l in April 2001 in well MW-09.

Ammonia concentrations increased in 2000 in the Mid-Plant Area (MW-07) and appeared to have peaked in April 2001. A similar trend was seen in Disposal Area D (SPMW-09).

Ammonia was detected at concentrations of 44 mg/l in April and 58 mg/l in October 2002 in well SPMW-06R; 69 mg/l in April and 150 mg/l in October 2002 in SPMW-07; and 39 mg/l in October 2002 in SPMW-09.

Ammonia was detected at concentrations of 49 mg/l in April and 60mg/l in October 2003 in well SPMW-06R; 120 mg/l in April and 130 mg/l in October 2003 in SPMW-07.

Ammonia was detected at concentrations of 31.5 mg/l in April 2004 in well SPIS-23; 31 mg/l in November 2004 in well SPIS-24; 69.2 mg/l in April 2004 and 63.2 mg/l in November 2004 in well SPMW-06R; 168.5 mg/l in April 2004 and 152 mg/l in November 2004 in well SPMW-07; and 36.5 mg/l in well SPMW-09 in November 2004.

Ammonia was detected at concentrations of 33.3 mg/l in October 2005 in well SPIS-24; 48.5 mg/l in April and 45.8 mg/l in October 2005 in well SPMW-06R; 123 mg/l in April 2005 and 51.9 mg/l in October 2005 in well SPMW-07; and 40.6 mg/l in well SPMW-09 in October 2005.

During the 2003 and 2004 monitoring period, there was a general increase in ammonia concentrations. This increase is believed to be the result of the disturbances to the area caused during the excavation and construction of landfill in 2001. These activities may have increased the permeability of the surface soils resulting in additional recharge to the aquifer.

The 2005 monitoring results for ammonia revealed a general decline in concentration with the most marked decline in well SPMW-07.

Nitrate/Nitrite

Although nitrate/nitrite was present in most groundwater samples analyzed, it was detected in concentrations at or above the site-specific PRG of 10 mg/l.

In 2000, nitrate/nitrite exceeded the PRG at three wells in the Mid-Plant Area (SPIS-24, SPMW-02, and SPMW-07) and in a single well in Disposal Area D (SPMW-09).

In April 2001, nitrate/nitrite was detected in MW-02, MW-07, and SPIS-24 at levels of 10, 17, and 7.8 mg/l, respectively.

In October 2001, nitrate/nitrite was detected in MW-02, MW-07, and SPIS-24 at levels of 4.4, 0.4, and 11 mg/l, respectively.

In 2002, nitrate/nitrite was detected at three locations: 10 mg/l in April at SPIS-24; 11 mg/l in April and 13 mg/l in October in SPMW-02; 42 mg/l in April and 35 mg/l in October in SPMW-06R; 28 mg/l in October in SPMW-07; and 16 mg/l in April at SPMW-09.

In 2003, nitrate/nitrite was detected at four locations: 12 mg/l in April at SPIS-24; 18 mg/l in April and 17 mg/l in October in SPMW-02; 24 mg/l in April and 36 mg/l in October in SPMW-06R; and 20 mg/l in April and October in SPMW-07.

In 2004, nitrate/nitrite was detected at five locations: 10.5 mg/l in April at SPIS-24; 50.6 mg/l in April and 18.8 mg/l in November in SPMW-02; 35.3 mg/l in April and 36.4 mg/l in November in SPMW-06R; 19 mg/l in April and 18 mg/l in November in SPMW-07; and 44.5 mg/l in November in SPMW-09.

In 2005, nitrate/nitrite was detected at five locations: 13.6 mg/l in April at SPIS-24; 21 mg/l in April and 30.5 mg/l in October in SPMW-06R; 13.7 mg/l in April and 14.5 mg/l in October in SPMW-07; 10.3 mg/l in April and 20.1 mg/l in October in SPMW-09; and 10.2 mg/l in April and October in SPOB-12R2.

The 2003 and 2004 data indicated that, in general, nitrate/nitrite concentrations declined. The most notable exception to this trend was seen in the Eastern Disposal Area well SPMW-06R, where nitrate/nitrite level rose dramatically in October 2003. Nitrate/nitrite level rose dramatically in wells SPMW-02 and SPMW-09 in April and November 2004, respectively.

Manganese

Manganese was present in all groundwater samples analyzed during year 2000. However, it was detected in only six locations at or above the site-specific PRG of 1.4 mg/l. Manganese exceeded the PRG in a single well in th Mid-Plant Area (SPMW-02), in a single well in Disposal Area D (SPMW-09), and in a single well in the area downgradient of the Eastern Disposal Area (SPMW-10). In addition, the concentrations exceeded the PRG in three of four newly installed monitor wells (SPMW-11, SPMW-12, and SPMW-13) located downgradient of the containment wells.

Manganese was detected in MW-02, MW-09, and MW-10 at levels of 2.1, 14.7, and 1.6 mgl/l, respectively, during the April 2001 sampling event. Manganese was detected at levels of 2.6, 3.4, and 7.4 mg/l in MW-03, MW-09, and MW-10, respectively during the October 2001 sampling event.

In 2002, manganese was detected at four locations at concentrations above PRG: 7.3 mg/l in April and 5.3 mg/l in October in SPMW-06R; 8.7 mg/l in April and; 46.1 mg/l in October in SPMW-09; 4.5 mg/l in April in SPMW-10; and 3.0 mg/l in October in SPMW-12.

In 2003, manganese was detected at five locations at concentrations above PRG: 5.2 mg/l in April and 5.5 mg/l in October in SPMW-06R; 8.1 mg/l in April and; 40.3 mg/l in October in SPMW-09; 1.7 mg/l in October in SPMW-10R; 4.1 mg/l in April and 3.7 mg/l in October in SPMW-11R; and 2.1 mg/l in April in SPMW-12.

In 2004, manganese was detected at two locations at concentrations above PRG: 5 mg/l in April and 4.5 mg/l in November in SPMW-06R; and 12.8 mg/l in April and; 26.8 mg/l in November in SPMW-09.

In 2005, manganese was detected at two locations at concentrations above PRG: 3.31 mg/l in April and 3.1 mg/l in October in SPMW-06R; and 19.4 mg/l in April and; 6.7 mg/l in October in SPMW-09.

With the exception of the Disposal Area D well SPMW-09, manganese concentrations appeared to be stable. Manganese concentrations in SPMW-09 rose considerably during 2002, 2003 and 2004.

Beryllium

In 2003, beryllium was detected at one location at concentration above PRG: 0.014 mg/l in April and 0.007 mg/l in October in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 3.51, and in October the pH was 3.78. The pH of the area generally ranges from 6.5 to 7.2.

In 2004, beryllium was detected at one location at concentration above PRG: 0.016 mg/l in April and 0.013 mg/l in November in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 3.53, and in November the pH was 4.04.

In 2005, beryllium was detected at one location at concentration above PRG: 0.0151 mg/l in April in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 4.17.

The pH of the area generally ranges from 6.5 to 7.2. Because the presence of dissolved metals is largely dependent on pH, it is believed that concentrations of beryllium decline below PRG a short distance from SPMW-09.

Cadmium

In 2003, cadmium was detected at one location at concentration above PRG: 0.0087 mg/l in April and 0.014 mg/l in October in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 3.51, and in October the pH was 3.78.

In 2004, cadmium was detected at one location at concentration above PRG: 0.013 mg/l in April and 0.022 mg/l in November SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 3.53, and in November the pH was 4.0.

In 2005, cadmium was detected at one location at concentration above PRG: 0.0176 mg/l in April in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 4.17.

The pH of the area generally ranges from 6.5 to 7.2. Because the presence of dissolved metals is largely dependent on pH, it is believed that concentrations of cadmium decline below PRG a short distance from SPMW-09.

Copper

In 2003, copper was detected at one location at concentration above PRG: 5.5 mg/l in April and 5.3 mg/l in October in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 3.51, and in October the pH was 3.78.

In 2004, copper was detected at one location at concentration above PRG: 8.7 mg/l in April and 5.6 mg/l in November in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 3.53, and in November the pH was 4.04.

In 2005, copper was detected at one location at concentration above PRG: 7.57 mg/l in April in SPMW-09. The pH of water in SPMW-09 has historically been low. In April the pH was 4.17.

The pH of the area generally ranges from 6.5 to 7.2. Because the presence of dissolved metals is largely dependent on pH, it is believed that concentrations of copper decline below PRG a short distance from SPMW-09.

Extracted Groundwater and Contaminant Mass

A combined total of approximately 334 millions gallons of groundwater was extracted by the containment wells SPIS-23 and SPIS-24 during the year 2000 . The mass of contaminants removed from the groundwater was calculated using the groundwater extraction information and groundwater quality results. The extracted mass of those contaminants of concern during the year 2000 are as follows:

- Ammonia - 18,155 Kg
- Nitrate/Nitrite - 10,580 kg
- Manganese - 414 kg

A combined total of approximately 280 millions gallons of groundwater was extracted by the containment wells SPIS-23 and SPIS-24 during the year 2001. The extracted mass of those contaminants of concern during the year 2001 are as follows:

- Ammonia - 11,576 Kg
- Nitrate/Nitrite - 6,921 kg
- Manganese - 310 kg

A combined total of approximately 166.6 millions gallons of groundwater was extracted by the containment wells SPIS-23 and SPIS-24 during the year 2002. The extracted mass of those contaminants of concern during the year 2002 are as follows:

- Ammonia - 14,838 Kg
- Nitrate/Nitrite - 7,515 kg
- Manganese - 342 kg

A combined total of approximately 199 millions gallons of groundwater was extracted by the containment wells SPIS-23 and SPIS-24 during the year 2003. The extracted mass of those contaminants of concern during the year 2003 are as follows:

- Ammonia - 14,085 Kg
- Nitrate/Nitrite - 5,662 kg
- Manganese - 246 kg

A combined total of approximately 262 millions gallons of groundwater was extracted by the containment wells SPIS-23 and SPIS-24 during the year 2004. The extracted mass of those contaminants of concern during the year 2004 are as follows:

- Ammonia - 12,075 Kg
- Nitrate/Nitrite - 8,276 kg
- Manganese - 287 kg

A combined total of approximately 232 millions gallons of groundwater was extracted by the containment wells SPIS-23 and SPIS-24 during the year 2005. The extracted mass of those contaminants of concern during the year 2004 are as follows:

- Ammonia - 20,240 Kg
- Nitrate/Nitrite - 7,416 kg
- Manganese - 251 kg

Hydraulic Containment

The FS for the Plant included a groundwater modeling simulation that demonstrated that pumping SPIS-23 and SPIS-24 would provide a capture zone capable of capturing the plume. This capture zone model was based on a pumping rate of 150 gpm for each extraction well. The actual pumping rates of the containment wells SPIS-23 and SPSI-24 were considerably higher.

- SPIS-23 pumped at a rate of 300 and 280 gallons per minute (gpm) during the monitoring events in April and October 2000, respectively. SPIS-24 pumped at 450 gpm and 240 gpm during those same respective time periods.
- SPIS-23 pumped at a rate of 196 gpm and 342 gpm during the monitoring events in April and October 2001, respectively. SPIS-24 pumped at 237 gpm and 293 gpm during those same respective time periods.
- During 2002, SPIS-23 and SPIS-24 pumped at average rates of 241 gpm and 317 gpm, respectively.
- During 2003, SPIS-23 and SPIS-24 pumped at average rates of 109 gpm and 225 gpm, respectively.
- During 2004, SPIS-23 and SPIS-24 pumped at average rates of 124 gpm and 375 gpm, respectively.
- During 2005, SPIS-23 and SPIS-24 pumped at average rates of 118 gpm and 321 gpm respectively.

NPDES Discharge Trends

Groundwater from extraction wells and from runoff is combined and then discharged through an outfall to the Ohio River. This outfall is permitted under Ohio EPA National Pollutant Discharge Elimination System (NPDES), which details effluent limitation and monitoring requirements. The Site's NPDES permit is maintained and monitored by the LEDC. This 5-year permit was renewed on May 1, 2003. This NPDES permit requires daily monitoring of the flow rate, monthly sampling for ammonia and nitrate concentrations, and semi-annual sampling for pH and acute toxicity at outfall 007.

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

This is the first Five-Year Review for the Site.

VI. FIVE-YEAR REVIEW PROCESS

Administrative Components

The U.S. EPA Remedial Project Manager (RPM), Nabil Fayoumi, notified Ohio EPA and the PRP's Project Coordinator (Chuck Gaedelmann, Honeywell) of the initiation of the five-year review process in the winter of 2006. The U.S. EPA RPM headed the five-year review team, and was assisted by Ohio EPA (primary contact for the review is Kevin O'Hara.). Kevin O'Hara also conducted an O&M inspection at the Site in February 2006, which covered many of the same elements as this review.

The review schedule included the following components:

- Community Notification;
- Document Review;
- Data Review;
- Site Inspection;
- Interviews; and
- Five-Year Review Report Development and Review.

Community Involvement

In February 2006, the RPM discussed the need to notify the community that the five-year review process was underway with the U.S. EPA Community Involvement Coordinator (CIC), Bri Bill. In March, 2006, the U.S. EPA Office of Public Affairs placed an ad in the local newspapers announcing that the Five-Year Review was in progress and requesting that any interested parties contact U.S. EPA for more information. A copy of the ad is in Appendix 3. Since the ad was issued, no member of the community has voiced an interest in the Five-Year Review.

Document Review

This Five-Year Review consisted of a review of relevant documents including: South Point Plant Site Annual Groundwater Monitoring Reports, O&M Annual Inspection Reports, Construction Completion Report, Ready for Industrial Reuse Determination, Draft Institutional Control Investigation/Study, dated March 2006, CD, and ROD.

Data Review

Since pumping operations began at the Site, approximately 1,242 million gallons of groundwater have been extracted and discharged into the Ohio River. The existing pumping system continues to operate and provide the necessary capture zone capable of capturing the groundwater plume.

Groundwater flow is generally to the southwest toward the Ohio River. Ammonia, nitrate/nitrite, and manganese were detected in groundwater samples from several wells at concentration above PRGs. The primary contaminant plumes are being captured by containment wells SPIS-23 and SPIS-24. Capture-zone models and inspection of groundwater flow maps support this determination.

During this first five year monitoring period, there was a general increase in ammonia concentrations. The increase is believed to be a result of the disturbances to the area caused during the excavation and construction of the Eastern Disposal Area landfill in 2001.

In general, sampling events during the five year evaluation period indicated that it appeared that nitrate/nitrite concentrations were declining in both the Mid-Plant Area and Disposal Area D Plumes. The elevated concentration in Disposal Area D was expected to decline following the removal of

impacted soils in this area as part of the remedial action slated performed for that area. In the Mid-plant Area well SPMW-07 nitrate/nitrite levels rose dramatically during 2002. The increase is believed to be the result of disturbances to the area due to the excavation and backfilling in 2001.

In general, sampling events during the five year evaluation period indicated with the exception of the Disposal Area D well SPMW-09, manganese concentrations appear to be declining. Manganese concentrations in SPMW-09 rose considerably during 2002. This increase is believed to be the results of disturbances to the area during excavation in 2001.

The pumping rates of SPIS-23 and SPIS-24 during the five year review period have been effective in containing the groundwater plumes as demonstrated by the analytical results and groundwater contour maps.

Discharge data for ammonia and nitrate/nitrite during the five year evaluation period indicated a general decline in ammonia and nitrate concentration over time. During that time period many wells at the site have cycled on and off. This may have caused the rapid fluctuation in concentrations.

The U.S. EPA's GEOS Team performed statistical analysis on groundwater chemistry data and evaluated the remedy capture zone and the remedy pumping rates. GEOS's findings, recommendations, and conclusions are included in Appendix III. GEO's recommended further evaluation for potential optimization of the capture zone as well as a recommendation to potentially collect additional data to enhance our understanding of current plume conditions.

Site Inspection

U.S. EPA and Ohio EPA conducted a Site inspection on April 19, 2006. Personnel from Honeywell (the PRP), OMI Inc. (O&M contractor), and Cox-Colvin and Associates, Inc. (RI/FS contractor) accompanied the regulatory team in the inspection. The purpose of the inspection was to assess the protectiveness of the remedies, including the condition of fencing to restrict access, the integrity of the cap, the condition of the existing pumping system, the condition of the monitoring wells, and the effectiveness of land use restrictions.

Pre-inspection meeting was held at the LEDC Office prior to the Site inspection. RPM Nabil Fayoumi gave an overview of the U.S. EPA's Five Year Review Program. PRPs provided an overview of the Site's history, remedial activities, O&M activities, and Site conditions before remedial activities compared with today. U.S. EPA and Ohio EPA comments on the PRP's Institutional Control Investigation Study were also discussed.

The following statements summarize the main topics covered during the inspection:

- The cap appeared to be in good physical condition and the grass cover was freshly mowed. This is reflective of monthly reports and a previous Site inspection conducted by Ohio EPA.
- Extraction and monitoring wells appeared to be in good condition and reflective of the monthly reports. Iron fouling is an ever present problem requiring considerable maintenance.
- Site fencing was intact and appeared to be in good condition. Signs were in good condition.

Ohio EPA conducted annual O&M inspections at the Site. During the inspection and site walkover, the Inspection Form included in the approved Operation & Maintenance Plan (February 2002) was used to evaluate and document site conditions. In most recent inspection, in October 2005, the Ohio EPA indicated that the Eastern Disposal Area cap was in good condition. All areas appeared to be adequately vegetated. All access roads, perimeter fences, gates, locks, and signs at the Eastern Disposal Area and other portions of the site were in good condition. Signs that marked locations of the discharge pipes for the drainage net, which is located immediately above the FML in the cap, are still in place, as are signs that mark the locations of cleanout ports for the drainage network.

The revegetated area at disposal Area D was in good condition, with the entire area now supporting healthy vegetation. The relocated path of Solida Creek in this area was in good condition, with no observed areas of erosion or instability along the creek bank. The dikes of the Northern Fly Ash Pond continued to be well vegetated and stable.

Biomass Energy, LLC - the owner of the eastern portion of the Northern Fly Ash Pond had accepted surplus tobacco from the U.S. Department of Agriculture, and had dumped the loose- leaf product in 440-lb boxes on the fly ash ponds, with subsequent crushing and spreading of the material. Several thousand tons were estimated to have been dumped there. In early April 2003, USDA discontinued shipment of the material. In early summer 2003, Biomass was ordered to remove the material and dispose of it in an approved landfill. The material was eventually removed in its entirety. These areas continued to recover, with vegetation steadily encroaching and reclaiming the area on which compacted stone had been placed for semi-trailer access.

Vegetation within the remediated Mid-Plant was also in good condition.

Interviews

There has been relatively low community interest in this Site. This low community interest in this Site is supported by the fact that neither the RPM nor the CIC has been contacted by the community in recent years. Further, no community members responded to the five-year review public notice that invited readers to contact the CIC for more information on the five-year review process. Therefore, the CIC and RPM decided not to conduct interviews of local residents.

However, because of the village's interest in redevelopment, RPM Nabil Fayoumi visited the Lawrence Economic Development Corporation (LEDC) office, located nearby, in South Point, Ohio during Site Inspection and discussed the Site and redevelopment issues with the LEDC's Executive Director, Bill W. Dingus. The LEDC is a non-profit Community Improvement Corporation formed under Chapter 1724, Ohio Revised Code. LEDC was formed in 1983 and was designated the economic development agent for the City of Ironton and Lawrence County.

Mr. Dingus inquired about using LEDC's portion of the Northern Fly Ash Ponds for container storage. It was discussed how this relates to the land use restriction which states that the vegetative cover on the fly ash ponds must be maintained.

Mr. Dingus gave an overview of LEDC's future plans and redevelopment efforts for the Site, and LEDC's efforts to attract business and jobs to the Village of South Point. He also expressed LEDC's desire for the Region to nominate the Site for a national redevelopment award.

VII. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

A review of the relevant documents and the result of the Site inspection indicate that the remedies are functioning as intended by the ROD and CD. Through an extensive O&M program that includes groundwater monitoring, chemical analysis, and NPDES discharge monitoring, the capture zone is generally being maintained. The groundwater monitoring program also continues to demonstrate the effectiveness of the containment system. The visual inspection of the cap demonstrates that it continues to be maintained in excellent condition.

The ROD and Construction Completion Report require that, in order for the remedy implemented for the Site to remain protective of human health and the environment, the following institutional controls must be followed:

1. there must be no use or public access allowed on the fenced and capped southern portion of the Site's Eastern Disposal Area, where on-site wastes were consolidated;
2. the fly ash deposits in the Site's Northern Fly Ash Pond must remain stabilized;
3. U.S. EPA and its contractors must be allowed access to all on-site monitoring wells at all times; and
4. potable groundwater use on the site is prohibited.

PRPs Ashland, Inc., Ashland Ethanol, Inc., and South Point Ethanol placed a deed restriction and restrictive covenants on the Site as part of the 1998 Consent Decree with U.S. EPA. The deed restriction and restrictive covenants restrict uses at the Site to commercial/industrial uses and require that any activities on the property must not disturb the Site remedy. Honeywell, Inc. is responsible for monitoring the Site's deed restrictions and restrictive covenants.

The deed restriction reads as follows, in part:

> " No building, structure, or other object shall be built or placed on the Site that would disturb the cap over the landfills or would otherwise disturb any component of the remedy at the Site. Further, no one shall use surface or groundwater from the Site for any purpose, including but not limited to human or animal consumption."

The seven restrictive covenants specify that the Site's future uses shall be limited to commercial/industrial purposes only and reiterate the specifications described in the deed restriction in great detail.

The Consent Decree states that the restrictive covenants will operate and be enforced as follows:

> "Said covenants shall run with the land, shall be binding upon any and all successors in interest, and all assignees, lessees, sublessees, operators, tenants, licensees and agencies, and any and all

persons who acquire any interest on the property, and shall be for the benefit of Ashland, Inc., Ashland Ethanol, Inc., and South Point Ethanol, An Ohio General Partnership, the U.S. EPA and shall be privileged to enforce these covenants by appropriate action in a court of a competent jurisdiction."

The full text of the Site's deed restriction and restrictive covenants is provided in Appendix 3.

The PRPs conducted an the IC Investigation/Study, dated March 2006 to ensure that ICs that are in-place are adequate to prevent exposure to contaminants which are included in Appendix 3. U.S. EPA evaluated IC Study/Investigation and has determined that the existing ICs, while protective of human health, welfare and the environment in the short term, and generally consistent with the selected remedy, may need to be modified as discussed elsewhere in this review. The ICs and foregoing land use restrictions shall continue until such time as the same are released or modified by action of the U.S. EPA.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy.

Changes in Standards and To be Considered (TBC)

Preliminary remedial goals (PRGs) were developed for constituents of concern in groundwater. The PRGs for groundwater chemical of concern are:

Chemical of Concern	Performance Standard (mg/l)
Arsenic	0.05
Beryllium	0.004
Cadmium	0.005
Copper	3.8
Manganese	1.4
Nickel	2
Ammonia (as Nitrogen)	30
Nitrate/Nitrite	10

mg/l milligram per liter

There have been no changes in these ARARs and TBCs that affect the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

There have been no changes in the exposure assumptions that were used in the risk assessment that would affect the protectiveness of the remedy. U.S. EPA considers the assumptions in the baseline risk assessment to be conservative and reasonable in evaluating risk-based cleanup levels. No change to these assumptions or to the cleanup levels developed from them is warranted. There has been no change in the standardized risk assessment methodology that would affect the protectiveness of the remedy. Because the remedy implemented engineering and institutional controls to prevent contact with contaminants that remain at the Site, changes in contaminant toxicity would not impact the effectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other events have affected the protectiveness of the remedy, and there is no other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

Based on a review of relevant documents, data, ARARs, risk assumptions, and the results of the Site inspection, the remedy is functioning as intended by the ROD. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. There have been no changes in exposure pathways or toxicity factors for the contaminants of concern which would impact the effectiveness of the remedy. The remedies have been implemented in accordance with the design plans, and in accordance with pre-design sampling which helped effectuate better remedies. There is no other information available that calls into question the protectiveness of the remedy.

VIII. ISSUES

- Coke fines from the nearby Allied Chemical and Ironton Coke Superfund Site were transported to Biomass Energy LLC (Biomass) at the Site, and these coke fines were to be used as an alternative fuel source for an incinerator. Biomass has not yet received a permit to operate their proposed incinerator and the coke fines are stored in a gutted building at the Site which doesn't provide protection from wind erosion and precipitation.

- The existing Institutional Controls (ICs) at the Site were recorded prior to performance of the remedial activities at the Site in 2001. At that time, the exact dimensions and location of the cap over the Eastern Disposal Area and the surface controls of the Northern Fly Ash Ponds were not known. Enhancement of the existing ICs can be performed by recording of the exact locations of these areas in the deeds for the properties on which they appear. The Eastern Disposal Area Landfill and the Northern Fly Ash Ponds are located on two parcels owned by Biomass Group, and on portions of Tract owned by LEDC. This will provide Honeywell and LEDC more flexibility redeveloping their portion of the Site for industrial purposes.

- The existing ICs for groundwater use do not reflect the existence of performance standards for groundwater at the Site. Performance standards were specified in the ROD. ICs need to incorporate a provision allowing the parcel owner to petition U.S. EPA to remove groundwater use restriction once the performance standards set forth in the ROD have been fully implemented.

- The existing monitoring requirements in the O&M Plan are adequate to ensure that the ICs are maintained in the short term and the long term. However, the plan does not contain an annual certification to the United States Environmental Protection Agency (U.S. EPA) that ICs are in place and remain effective nor are the O&M Reports provided to current landowners. U.S. EPA will ask Honeywell to modify its O&M plan to include this annual certification, and also require that information relevant to land use restrictions is provided annually to current landowners.

- In reviewing the IC Study Report, it appears that there are some parcels within the Site that are not subject to the groundwater usage restriction (Grantees 2, 3, and 4; the report indicates that those parcels were transferred back in the mid-80s, and therefore the deeds do not fall under the restrictions). These are zoned industrial and should a user install a well for industrial purposes, its hydraulic impact could affect the existing capture zone. Since the impact on the existing capture zone is a concern, upon a revision to the restrictions, U.S. EPA will seek to prohibit all pumping of groundwater that might impact that capture zone, and embody this in the UECA covenants or other proprietary controls.

- U.S. EPA's Groundwater Evaluation and Optimization System (GEOS) Team performed an independent analysis of the groundwater data as part of this review. While the capture zone appears adequate, GEOS recommended that the system can likely be optimized, but this will require further study.

- LEDC inquired about redeveloping their portion of the Northern Fly Ash Ponds for cargo container storage. In addition, LEDC expressed an interest in the Agency's national redevelopment awards and inquired as to how their work can be considered for such an award.

IX. Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Mile-stone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Coal and Coke Fines	Follow-up on enforcement action with the Biomass facility owner	Ohio EPA	U.S. EPA	On-going enforcement case	N	N
ICs	Submission of an IC Plan	Honeywell	U.S. EPA	Nov. 2006	N	Maybe
GEOS's Data Analysis	Evaluate optimization strategies for the groundwater capture system as recommended in the GEOS Report.	Honeywell	U.S.EPA Ohio EPA	Nov. 2006	N	N

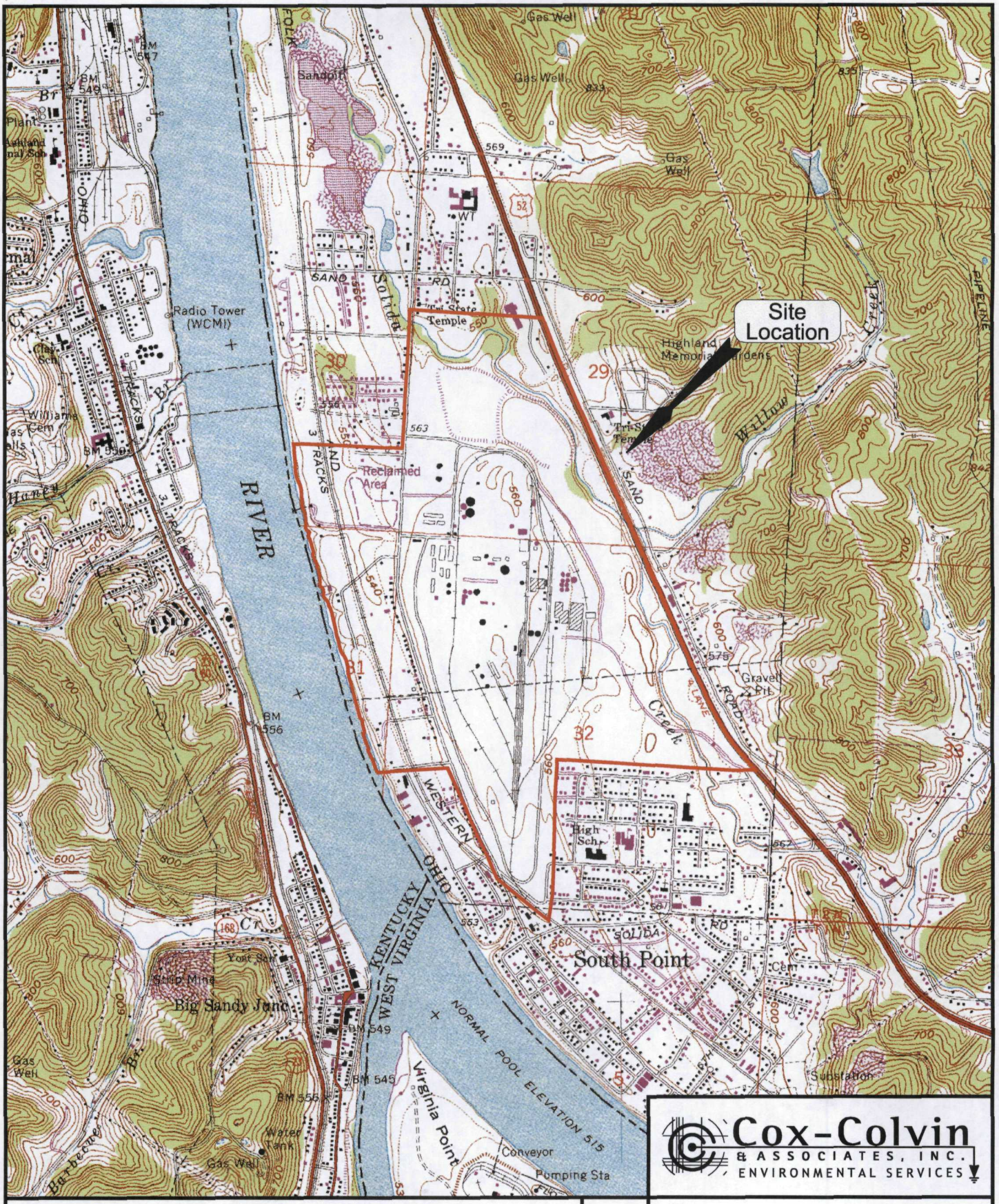
Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Mile-stone Date	Affects Protectiveness? (Y/N)	
					Current	Future
LEDC *inquiry for* redevelop-ment & national award	Follow-up with LEDC *on* redevelopment strategy and coordinate with U.S. EPA redevelopment office.	U.S. EPA	Ohio EPA	Nov. 2007	N	N

X. Protectiveness Statement

The remedies at the South Point Site are protective of human health and the environment in the short-term because threats at the Site have been addressed through capping, maintaining inward hydraulic gradients, maintaining an adequate groundwater contaminant capture zone, installation of fencing and warning signs, and implementation of deed notices (institutional controls) (deed restrictions); however to assure that the remedy is protective in the long-term, U.S. EPA will seek to modify the existing deed notices, and seek protective proprietary interests, such as UECA covenants.

XI. Next Review

The next Five-Year Review for the South Point Site is required by May 2011, five years from the date of this review.



Scale 1:24,000

0' 1000' 2000' 3000' 4000' 5000'

N

Source: 7.5 Minute Series Quadrangle
Catlettsburg, Kentucky - 1968
Photorevised 1985

Figure 2-1

Site Location Map,
South Point Plant Superfund Site,
South Point, Ohio

DWG NAME: network2004 DATE: 01/24/2001 DRAWN BY: GL CHECKED BY: CAC REVISION NO.:

CONTAINMENT WELLS	WATER LEVELS AND WATER QUALITY	WELLS USED FOR WATER LEVELS ONLY
SPIS-23	SPMW-01	SPIS-01
SPIS-24	SPMW-02	SPIS-02
	SPMW-03	SPIS-05
	SPMW-04	SPIS-06
	SPMW-05	SPIS-10
	SPMW-06R	SPIS-15
	SPMW-07	SPIS-15A
	SPMW-08	SPIS-18
	SPMW-09	SPIS-22
	SPMW-10R	SPIS-25
	SPMW-11R	SPIS-26
	SPMW-12	SPIS-27
	SPMW-13	SPIS-28
	SPOB-12R2	SPOB-15R2
	SPOB-34	SPOB-17R
		SPOB-18R
		SPOB-26
		SPOB-29
		T2-B
		Caisson

Legend

Areas Subject to Inspection and Maintenance

Groundwater Containment System

- Containment Wells
- Wells Used for Water Levels and Water Quality
- Wells Used for Water Levels Only

N

Scale

0' 500' 1000' 2000'

Monitor and Containment Well Locations

Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Monitor and Containment Well Locations,
South Point Plant Superfund Site,
South Point, Ohio

Figure
3-1

DWG NAME: waterlevel04212005 DATE: 02/23/2006 DRAWN BY: CAC CHECKED BY: CAC REVISION NO.:

WATER LEVELS AND WATER QUALITY	WATER LEVEL ELEVATIONS
SPMW-01	530.13
SPMW-02	524.83
SPMW-03	522.45
SPMW-04	520.72
SPMW-05	525.59
SPMW-06R	526.90
SPMW-07	522.52
SPMW-08	526.78
SPMW-09	527.83
SPMW-10R	527.53
SPMW-11R	519.58
SPMW-12	520.70
SPMW-13	520.92
SPOB-12R2	521.05
SPOB-34	520.78

WELLS USED FOR WATER LEVELS ONLY	WATER LEVEL ELEVATIONS
SPIS-01	521.57
SPIS-02	521.73
SPIS-05	516.13
SPIS-06	526.40
SPIS-10	521.77
SPIS-15	524.60
SPIS-15A	527.47
SPIS-18	526.24
SPIS-22	521.24
SPIS-25*	525.51
SPIS-26	526.40
SPIS-27*	522.91
SPIS-28	521.00
SPOB-15R2	521.85
SPOB-17R	518.81
SPOB-18R	517.64
SPOB-26	521.70
SPOB-29	523.90
T2-B	529.01
Caisson	515.09

* Measurement is suspect and was not used in contouring.

Copper exceeded the PS of 3.8 mg/L in April.

EASTERN DISPOSAL AREA LANDFILL CAP and FENCE

EASTERN DISPOSAL AREA NORTH (Revegetated Area)

DISPOSAL AREA D

NORTHERN FLYASH PONDS

MID PLANT AREA

COKE-OVEN GAS BLOWDOWN AREAS

Ohio River

530 529 528 527 526 525 524 523 522 521 520 519 518 517 516

Legend

Areas Subject to Inspection and Maintenance

Containment Wells

Wells Used for Water Levels and Water Quality

Wells Used for Water Levels Only

Water level data collected April 21, 2005

518 Elevation of water table (feet above msl)

N

Scale

0' 450' 900' 1800'

Groundwater Flow Map (April 2005)

Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Groundwater Flow Map (April 2005),
South Point Plant Superfund Site,
South Point, Ohio

Figure

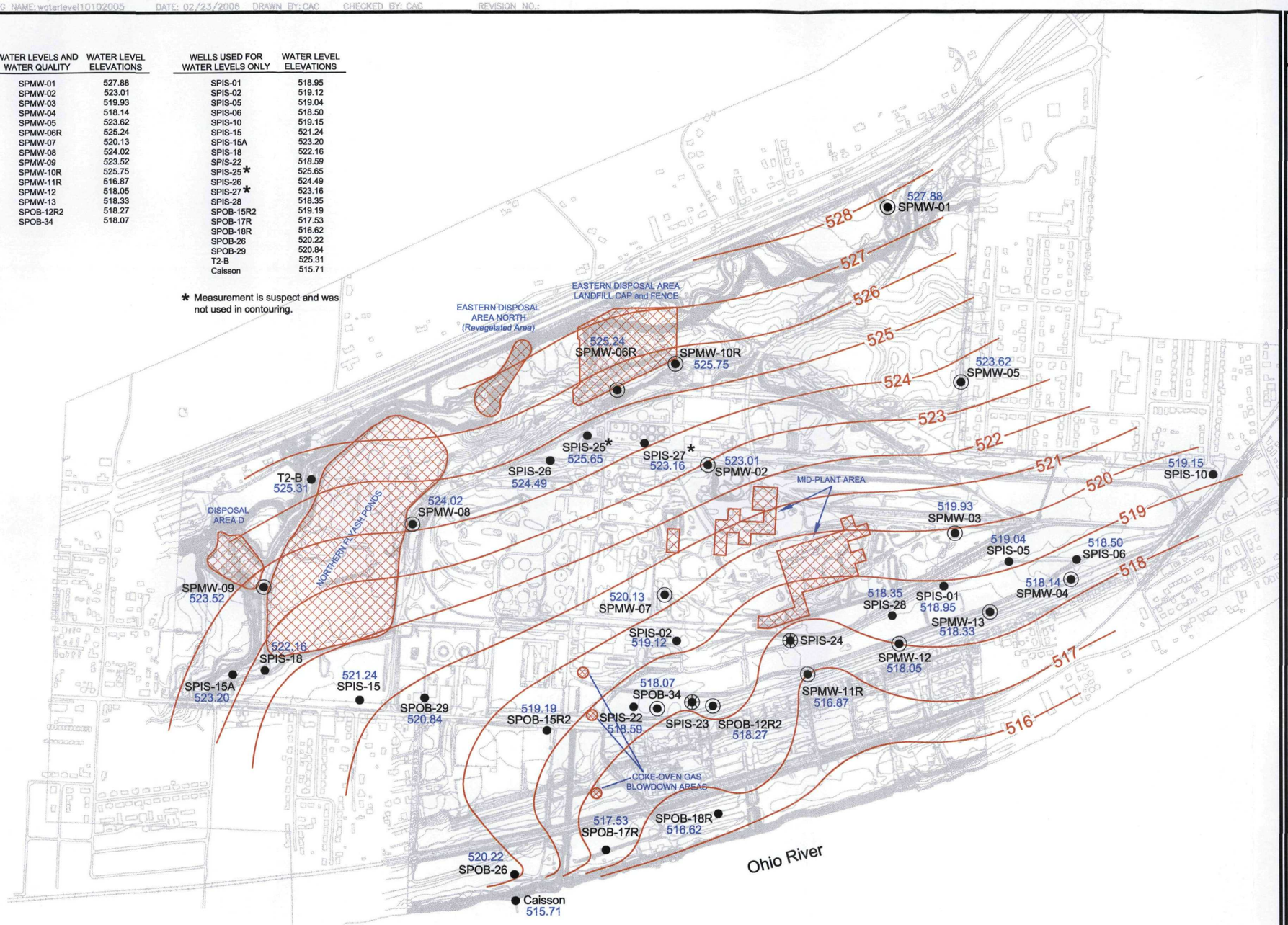
4-1

DWG NAME: waterlevel10102005 DATE: 02/23/2006 DRAWN BY: CAC CHECKED BY: CAC REVISION NO.:

WATER LEVELS AND WATER QUALITY	WATER LEVEL ELEVATIONS
SPMW-01	527.88
SPMW-02	523.01
SPMW-03	519.93
SPMW-04	518.14
SPMW-05	523.62
SPMW-06R	525.24
SPMW-07	520.13
SPMW-08	524.02
SPMW-09	523.52
SPMW-10R	525.75
SPMW-11R	516.87
SPMW-12	518.05
SPMW-13	518.33
SPOB-12R2	518.27
SPOB-34	518.07

WELLS USED FOR WATER LEVELS ONLY	WATER LEVEL ELEVATIONS
SPIS-01	518.95
SPIS-02	519.12
SPIS-05	519.04
SPIS-06	518.50
SPIS-10	519.15
SPIS-15	521.24
SPIS-15A	523.20
SPIS-18	522.16
SPIS-22	518.59
SPIS-25 *	525.65
SPIS-26	524.49
SPIS-27 *	523.16
SPIS-28	518.35
SPOB-15R2	519.19
SPOB-17R	517.53
SPOB-18R	516.62
SPOB-26	520.22
SPOB-29	520.84
T2-B	525.31
Caisson	515.71

* Measurement is suspect and was not used in contouring.



Legend

Areas Subject to Inspection and Maintenance

Containment Wells

Wells Used for Water Levels and Water Quality

Wells Used for Water Levels Only

Water level data collected October 10, 2005

—518— Elevation of water table (feet above msl)

N

Scale

0' 450' 900' 1800'

Groundwater Flow Map (October 2005)

Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Groundwater Flow Map (October 2005),
South Point Plant Superfund Site,
South Point, Ohio

Figure
4-2

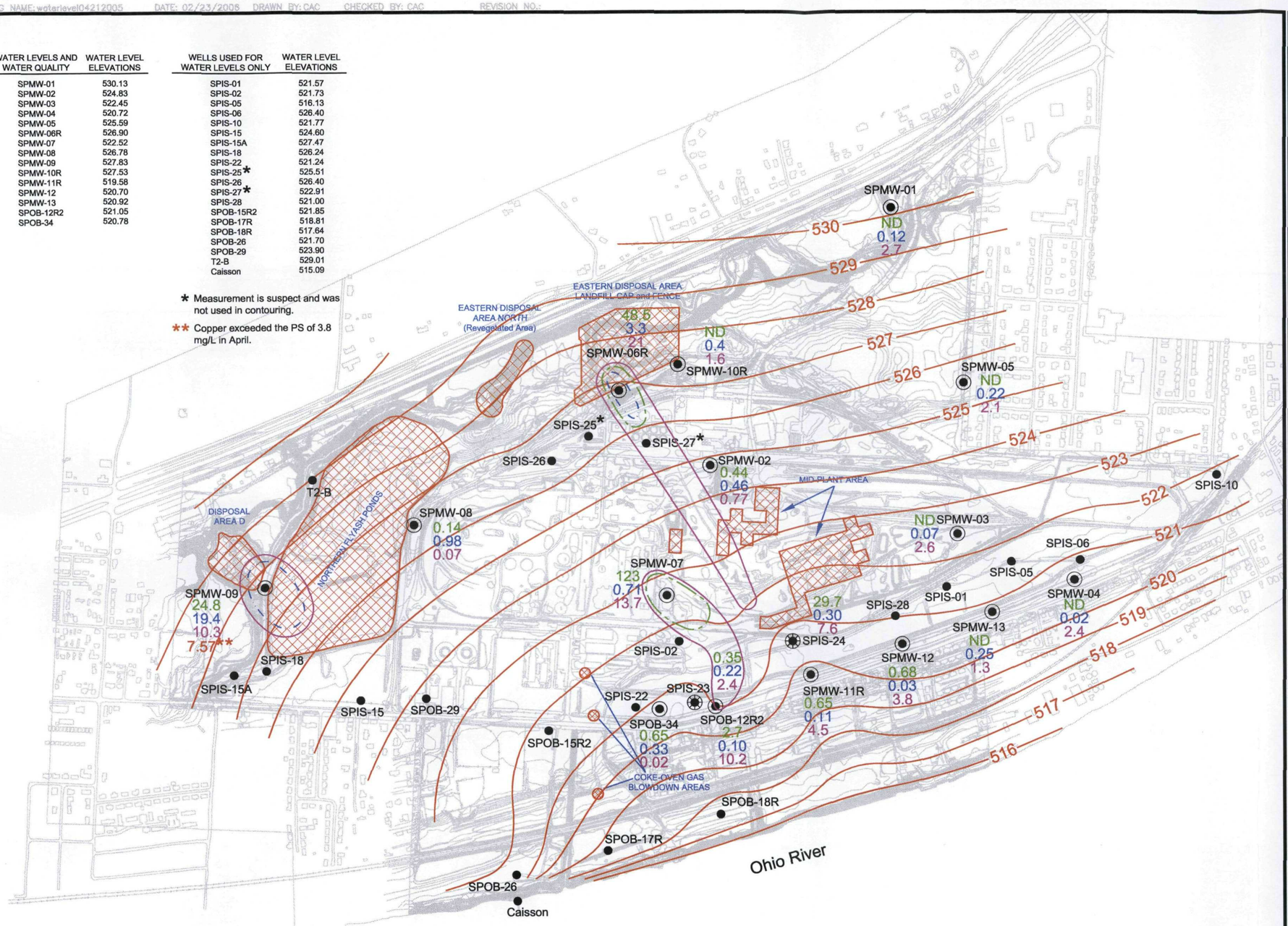
DWG_NAME: wgtarlevel04212005 DATE: 02/23/2008 DRAWN_BY: CAC CHECKED_BY: CAC REVISION_NO.:

WATER LEVELS AND WATER QUALITY	WATER LEVEL ELEVATIONS
SPMW-01	530.13
SPMW-02	524.83
SPMW-03	522.45
SPMW-04	520.72
SPMW-05	525.59
SPMW-06R	526.90
SPMW-07	522.52
SPMW-08	526.78
SPMW-09	527.83
SPMW-10R	527.53
SPMW-11R	519.58
SPMW-12	520.70
SPMW-13	520.92
SPOB-12R2	521.05
SPOB-34	520.78

WELLS USED FOR WATER LEVELS ONLY	WATER LEVEL ELEVATIONS
SPIS-01	521.57
SPIS-02	521.73
SPIS-05	516.13
SPIS-06	526.40
SPIS-10	521.77
SPIS-15	524.60
SPIS-15A	527.47
SPIS-18	526.24
SPIS-22	521.24
SPIS-25*	525.51
SPIS-26	526.40
SPIS-27*	522.91
SPIS-28	521.00
SPOB-15R2	521.85
SPOB-17R	518.81
SPOB-18R	517.64
SPOB-26	521.70
SPOB-29	523.90
T2-B	529.01
Caisson	515.09

* Measurement is suspect and was not used in contouring.

** Copper exceeded the PS of 3.8 mg/L in April.



Legend

- Areas Subject to Inspection and Maintenance
- Containment Wells
- Wells Used for Water Levels and Water Quality
- Wells Used for Water Levels Only

Water level data collected April 21, 2005

- 516 — Elevation of water table (feet above msl)
- Ammonia Plume - 30 mg/L
- Manganese Plume - 1.4 mg/L
- Nitrate Plume - 10 mg/L

1.1	Ammonia Concentrations in mg/L
0.23	Manganese Concentrations in mg/L
3.2	Nitrate Concentrations in mg/L
7.57	Copper Concentrations in mg/L
ND	Not Detected

N

Scale

0' 450' 900' 1800'

Groundwater Plume Geometry (April 2005)

Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Groundwater Plume Geometry (April 2005),
South Point Plant Superfund Site,
South Point, Ohio

Figure
4-3

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: South Point Plant Site	**Date of inspection:** 4/19/06
Location and Region: South Point, OH Region 5	**EPA ID:** OHD 071 650 005 92
Agency, office, or company leading the five-year review: USEPA	**Weather/temperature:** Hot, Sunny, clear, 72°F

Remedy Includes: (Check all that apply)

- ✓ Landfill cover/containment
- ✓ Access controls
- ✓ Institutional controls
- Groundwater pump and treatment
- Surface water collection and treatment
- Other _____
- Monitored natural attenuation
- ✓ Groundwater containment
- Vertical barrier walls

Attachments: Inspection team roster attached Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Joseph Davis (Name) — Project Manager (Title) — 4/19/06 (Date)
   Interviewed (at site) at office by phone Phone no. 330-310-2806
   Problems, suggestions; Report attached None.

2. **O&M staff** Craig A. Cox (Name) — project Manager (Title) — 4/15/06 (Date)
   Interviewed (at site) at office by phone Phone no. 614-526-2040
   Problems, suggestions; Report attached None.

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Ohio EPA
Contact Kevin O'Hara — State Inspector — 4/19/06 — 740-380 5247
Name — Title — Date — Phone no.
Problems; suggestions; Report attached None.

Agency _____
Contact _____ — _____ — _____ — _____
Name — Title — Date — Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____ — _____ — _____ — _____
Name — Title — Date — Phone no.
Problems; suggestions; Report attached _____

Agency _____
Contact _____ — _____ — _____ — _____
Name — Title — Date — Phone no.
Problems; suggestions; Report attached _____

4. **Other interviews** (optional) Report attached.

None.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1.	**O&M Documents**			
	O&M manual	Readily available	Up to date	N/A
	As-built drawings	Readily available	Up to date	N/A
	Maintenance logs	Readily available	Up to date	N/A
	Remarks Available at Ironton to the Allied Chemical and Ironton Superfund Site.			
2.	**Site-Specific Health and Safety Plan**	Readily available	Up to date	N/A
	Contingency plan/emergency response plan	Readily available	Up to date	N/A
	Remarks Available at the Allied Chemical and Ironton Superfund Site			
3.	**O&M and OSHA Training Records**	Readily available	Up to date	N/A
	Remarks Available at the Allied Chemical and Ironton Superfund Site.			
4.	**Permits and Service Agreements**			
	Air discharge permit	Readily available	Up to date	N/A
	(Effluent discharge)	Readily available	Up to date	N/A
	Waste disposal, POTW	Readily available	Up to date	N/A
	Other permits	Readily available	Up to date	N/A
	Remarks Available at the Allied Chemical and Ironton Superfund Site.			
5.	**Gas Generation Records**	Readily available	Up to date	(N/A)
	Remarks			
6.	**Settlement Monument Records**	Readily available	Up to date	(N/A)
	Remarks			
7.	**Groundwater Monitoring Records**	Readily available	Up to date	N/A
	Remarks Available at the Allied Chemical and Ironton Superfund Site.			
8.	**Leachate Extraction Records**	Readily available	Up to date	(N/A)
	Remarks			
9.	**Discharge Compliance Records**			
	Air	Readily available	Up to date	(N/A)
	(Water (effluent))	Readily available	Up to date	N/A
	Remarks At the Allied Chemical and Ironton Superfund Site.			
10.	**Daily Access/Security Logs**	Readily available	Up to date	N/A
	Remarks At the Allied Chemical and Ironton Superfund Site			

IV. O&M COSTS

1. **O&M Organization**

State in-house — Contractor for State
PRP in-house — Contractor for PRP (circled)
Federal Facility in-house — Contractor for Federal Facility
Other OMI Inc.

2. **O&M Cost Records**

Readily available — Up to date
Funding mechanism/agreement in place
Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____ Date	To _____ Date	_____ Total cost	Breakdown attached
From _____ Date	To _____ Date	_____ Total cost	Breakdown attached
From _____ Date	To _____ Date	_____ Total cost	Breakdown attached
From _____ Date	To _____ Date	_____ Total cost	Breakdown attached
From _____ Date	To _____ Date	_____ Total cost	Breakdown attached

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS — Applicable (circled) N/A

A. Fencing

1. **Fencing damaged** — Location shown on site map — Gates secured — N/A

Remarks No damaged fence. Gates are secured.

B. Other Access Restrictions

1. **Signs and other security measures** — Location shown on site map — N/A

Remarks Good; no indication of forced entry.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — Yes (No) N/A
Site conditions imply ICs not being fully enforced — Yes (No) N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency Quarterly
Responsible party/agency PRPs / Ohio EPA
Contact Chuck Gradeless — _____ — 4/19/06 — 952-830-3685
Name — Title — Date — Phone no.

Reporting is up-to-date — (Yes) No N/A
Reports are verified by the lead agency — (Yes) No N/A

Specific requirements in deed or decision documents have been met — (Yes) No N/A
Violations have been reported — Yes No (N/A)
Other problems or suggestions: Report attached

2. **Adequacy** — (ICs are adequate) ICs are inadequate N/A
Remarks _____

D. General

1. **Vandalism/trespassing** — Location shown on site map — (No vandalism evident)
Remarks _____

2. **Land use changes on site** — N/A
Remarks None

3. **Land use changes off site** — N/A
Remarks None

VI. GENERAL SITE CONDITIONS

A. Roads — (Applicable) N/A

1. **Roads damaged** — Location shown on site map — (Roads adequate) N/A
Remarks paved access Road in good condition.

B. Other Site Conditions

Remarks_____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS Applicable N/A

A. Landfill Surface

1. **Settlement** (Low spots) Location shown on site map (Settlement not evident)
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** Location shown on site map (Cracking not evident)
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** Location shown on site map (Erosion not evident)
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** Location shown on site map (Holes not evident)
   Areal extent_____ Depth_____
   Remarks_____
   _____

5. **Vegetative Cover** Grass (Cover properly established) No signs of stress
   Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** (N/A)
   Remarks_____
   _____

7. **Bulges** Location shown on site map Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** (Wet areas/water damage not evident)
   - Wet areas — Location shown on site map — Areal extent_____
   - Ponding — Location shown on site map — Areal extent_____
   - Seeps — Location shown on site map — Areal extent_____
   - Soft subgrade — Location shown on site map — Areal extent_____

   Remarks_____

9. **Slope Instability** Slides — Location shown on site map (No evidence of slope instability)
   Areal extent_____
   Remarks_____

B. Benches Applicable (N/A)

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** — Location shown on site map — (N/A or okay)
   Remarks_____

2. **Bench Breached** — Location shown on site map — (N/A or okay)
   Remarks_____

3. **Bench Overtopped** — Location shown on site map — (N/A or okay)
   Remarks_____

C. Letdown Channels Applicable (N/A)

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** — Location shown on site map — (No evidence of settlement) N/A
   Areal extent_____ Depth_____
   Remarks_____

2. **Material Degradation** — Location shown on site map — (No evidence of degradation) N/A
   Material type_____ Areal extent_____
   Remarks_____

3. **Erosion** — Location shown on site map — (No evidence of erosion) N/A
   Areal extent_____ Depth_____
   Remarks_____

4. **Undercutting** Location shown on site map (No evidence of undercutting) NA
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ (No obstructions) NA
Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____ NA
No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations Applicable (N/A)

1. **Gas Vents** Active (Passive)
(Properly secured/locked) (Functioning) Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance
N/A
Remarks_____

2. **Gas Monitoring Probes**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance (N/A)
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
(Properly secured/locked) (Functioning) (Routinely sampled) (Good condition)
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

4. **Leachate Extraction Wells**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance (N/A)
Remarks_____

5. **Settlement Monuments** Located Routinely surveyed (N/A)
Remarks_____

E. Gas Collection and Treatment Applicable N/A

1. **Gas Treatment Facilities**
   Flaring Thermal destruction Collection for reuse
   Good condition Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   Good condition Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   Good condition Needs Maintenance N/A
   Remarks_____

F. Cover Drainage Layer Applicable N/A

1. **Outlet Pipes Inspected** Functioning N/A
   Remarks_____

2. **Outlet Rock Inspected** Functioning N/A
   Remarks_____

G. Detention/Sedimentation Ponds Applicable N/A

1. **Siltation** Areal extent_____ Depth_____ N/A
   Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   Erosion not evident
   Remarks_____

3. **Outlet Works** Functioning N/A
   Remarks_____

4. **Dam** Functioning N/A
   Remarks_____

H. Retaining Walls Applicable N/A

1. **Deformations** Location shown on site map Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** Location shown on site map Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge Applicable N/A

1. **Siltation** Location shown on site map Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** Location shown on site map N/A
   Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** Location shown on site map Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** Functioning N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS Applicable N/A

1. **Settlement** Location shown on site map Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   Performance not monitored
   Frequency_____ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES Applicable N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines Applicable N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   Good condition All required wells properly operating Needs Maintenance N/A
   Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

B. Surface Water Collection Structures, Pumps, and Pipelines Applicable N/A

1. **Collection Structures, Pumps, and Electrical**
   Good condition Needs Maintenance
   Remarks_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. ***Spare Parts and Equipment***
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

C. Treatment System Applicable N/A

1. **Treatment Train** (Check components that apply)
   - Metals removal — Oil/water separation — Bioremediation
   - Air stripping — Carbon adsorbers
   - Filters_____
   - Additive (*e.g.*, chelation agent, flocculent)_____
   - Others_____
   - Good condition — Needs Maintenance
   - Sampling ports properly marked and functional
   - Sampling/maintenance log displayed and up to date
   - Equipment properly identified
   - Quantity of groundwater treated annually_____
   - Quantity of surface water treated annually_____

   Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   N/A — Good condition — Needs Maintenance

   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   N/A — Good condition — Proper secondary containment — Needs Maintenance

   Remarks_____

4. **Discharge Structure and Appurtenances**
   N/A — Good condition — Needs Maintenance

   Remarks_____

5. **Treatment Building(s)**
   - N/A — Good condition (esp. roof and doorways) — Needs repair
   - Chemicals and equipment properly stored

   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   - Properly secured/locked — Functioning — Routinely sampled — Good condition
   - All required wells located — Needs Maintenance — ~~N/A~~

   Remarks_____

D. Monitoring Data

1. Monitoring Data
   Is routinely submitted on time — Is of acceptable quality

2. Monitoring data suggests:
   Groundwater plume is effectively contained — Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   Properly secured/locked Functioning Routinely sampled Good condition
   All required wells located Needs Maintenance N/A
   Remarks_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

4/19/06 South point 5 yr Review

Sign_in sheet for pre-Inspection Meeting

Name	Org.	Title	phone no.
Nabil Fayoumi	USEPA	RPM	312-886-6840
Chuck Geadelmann	Honeywell	Rem. Mgr	763-954-5418
Craig A. Cox	Cox-Colvin & Assoc.	Principal Sci.	(614) 526-2040
Joseph Davis	OMI INC.	Project Manager	330 310 2806
Steve Colvin	MACTEC	Project Manager	763-954-5399
Kevin O'Hara	Ohio EPA	Site Coordinator	740-380-5247

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BRADENTON, Fla. (AP) — On a day the Pittsburgh Pirates' B-team starters sent 16 batters to the plate in a 10-run first inning against a Cincinnati Reds split squad, manager Jim Tracy was as eager to talk about his starting pitcher as he was about his hitters.

Craig Wilson and Jose Castillo had two-run doubles in the overwhelming first inning against Reds left-hander Michael Gosling, and Humberto Cota drove in four runs in a 15-5 Pirates victory Saturday achieved mostly with second-line players.

With most of their regulars opposing the Phillies, the Pirates had four extra-base hits and a 5-0 lead before Gosling got his only out, on Cota's sacrifice fly.

Gosling is competing for a possible opening in the Reds' rotation. But the former Diamondbacks second-round draft pick may have pitched himself out of contention.

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Ironton Tribune, 3/19/06

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Status Review to Begin
South Point Plant Superfund Site
South Point, Ohio

U.S. Environmental Protection Agency has begun its "five-year" review of the cleanup at the South Point Plant located on U.S. Highway 52 in South Point, Ohio. The federal Superfund law requires a review at least every five years at sites where the cleanup is complete or underway, but levels of hazardous waste remain on the site. The Agency conducts this review to make sure the cleanup still protects people and the environment.

Cleanup to address contamination on the site began in 1998. The work included excavation and disposal of waste and contaminated soil at a licensed off-site landfill, consolidation of remaining waste under a single barrier cover to prevent infiltration of rainwater, pumping out of contaminated ground water and discharging of treated water to the Ohio River, use of fencing, signs and deed restrictions to restrict access to contaminated areas, and continued ground water monitoring to ensure the cleanup plan is operating as designed.

During the review, EPA will inspect the site and review monitoring results to ensure the remedy continues to protect human health and the environment. EPA will then prepare a report of its findings that will be announced in the newspaper and make a copy available for public review.

EPA invites you to provide information that you think might be important in this site review. Please contact Nabil Fayoumi, remedial project manager, EPA Region 5, 77 W. Jackson Blvd., Chicago, IL 60604; (312) 886-6840 or (800) 621-8431 during regular business hours; e-mail: fayoumi.nabil@epa.gov. Your information will be most valuable if received by April 7, 2006. The five-year review report will be completed by May 2, 2006. Site-related documents are available for review at the Briggs Lawrence Library, 317 Solida Road, South Point.

EPA

On this day, October 26, 2004,
the U.S. Environmental Protection Agency (U.S. EPA)

Determines that

LEDC Parcels of Land at the South Point Plant Superfund Site Are Ready for Industrial Reuse

U.S. EPA Region 5
Superfund Director

Richard C Karl

This Ready for Reuse (RfR) determination is for the parcels of land at the South Point Plant Superfund site ("Site") owned by the Lawrence Economic Development Corporation (LEDC) This RfR determination provides that U.S. EPA has made a technical determination that LEDC-owned parcels of land at the Site, located in the Village of South Point, Lawrence County, Ohio, are ready for industrial reuse and the Site's remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations as specified in the Record of Decision (ROD), other response decision documents, and the land title documents, which have been summarized in the attached report, Ready for Reuse Determination, South Point Plant Superfund Site, October 26, 2004. *This RfR determination remains valid only as long as the requirements and use limitations specified in the ROD, other response decision documents, and the land* title documents are met.

Limitations on Site uses identified in the ROD include the following: groundwater may not be used for purposes other than monitoring and remediation and Site activities shall not interfere with the Site's remedy and long-term groundwater monitoring program. No use or public access is allowed on the fenced and capped southern portion of the Site's Eastern Disposal Area The fly ash deposits in the Site's Northern Fly Ash ponds must remain stabilized. U.S. EPA and Ohio EPA shall be provided access to the Site for operation, maintenance, and inspection activities. The components of the remedy requiring ongoing operation and maintenance are: quarterly inspection of the Eastern Disposal Area's cap and fencing, erosional controls at remediated areas, surface stabilization controls at the Northern Fly Ash Ponds, and long-term groundwater monitoring. Honeywell, Inc. is responsible for the continuing operation and maintenance of the remedy at the Site

This RfR determination is a technical decision document and does not have any legally binding effect and does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities and/or for any possible or potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including but not limited to legal, equitable, or administrative rights. U.S EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with the Site, including but not limited to instances when new or additional information has been discovered regarding the contamination or conditions at the Site that indicate that the remedy and/or the conditions at the Site are no longer protective of human health or the environment for the types of uses identified in the RfR determination. Honeywell, Inc. is responsible for ensuring that any limitations specified in the ROD that might be affected by a particular industrial use are complied with during the activity

The types of uses identified as protective in this RfR determination remain subject to (i) applicable federal, state, and local regulation, and to (ii) title documents, including but not limited to easements, restrictions, and institutional controls.

TABLE OF CONTENTS

LIST OF EXHIBITS

I. Executive Summary

This Ready for Reuse (RfR) determination is for the parcels of land at the 610-acre South Point Plant Superfund site ("Site") owned by Lawrence Economic Development Corporation (LEDC).[1] The areas of the Site addressed by U.S. EPA include the 40-acre Northern Fly Ash Ponds, the 13-acre Eastern Disposal Area, the two-acre Disposal Area D, the 25-acre Mid-Plant Area, and the less-than-one-acre Coke Oven Gas Blowdown Area.

The conditions summarized in this RfR determination are based on limitations and requirements established in U.S. EPA decision documents for the Site, including the Record of Decision (ROD). U.S. EPA has made a technical determination that these parcels of land at the Site, located in the Village of South Point, Lawrence County, Ohio, are ready for industrial use and that the Site's remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations identified below, as specified in the ROD.

1. LEDC-owned parcels of land at the Site are ready for industrial use consistent with scenarios in the Site's baseline risk assessment (BLRA). The BLRA assumed that the Site could be used as an industrial complex or could be used for alternative industrial uses in the future that involved construction activities. LEDC-owned parcels of land at the Site are safe for industrial use so long as:
   a. there is no use or public access allowed on the fenced and capped southern portion of the Site's Eastern Disposal Area, where on-site wastes were consolidated;
   b. the fly ash deposits in the Site's Northern Fly Ash Ponds remain stabilized;
   c. U.S. EPA and its contractors are allowed access to all on-site monitoring wells at all times; and
   d. potable groundwater use on the Site is prohibited.

2. The components of the remedy requiring ongoing operation and maintenance are: the fenced and capped portion of the Eastern Disposal Area, erosional controls at remediated areas of Disposal Area D, the Mid-Plant Area, and the Coke-Oven Gas Blowdown Area, the Northern Fly Ash Ponds, and the Site's groundwater monitoring and pumping system. Honeywell, Inc., one of the site's potentially responsible parties (PRPs), is responsible for the operation and maintenance of the remedy at the Site.

U.S. EPA has assessed the risk to human health and the environment resulting from contamination at the Site. During U.S. EPA's investigation of the Site in February 1993, a baseline risk assessment of the human and environmental risks associated with industrial and residential uses at the Site was conducted. Unacceptable risks identified for the Site included human exposure to chloride, nitrate, and sulfate, with lesser amounts of the heavy metals iron

[1] The RfR determination excludes the fenced and capped portion of Eastern Disposal Area owned by LEDC.

and manganese, through groundwater, and heavy metals, including arsenic, and lesser amounts of chloride, nitrate, ammonium, and sulfate, through surface soil. In its Record of Decision (ROD), U.S. EPA selected response actions to manage and eliminate these risks. With the completion of the response actions required by the ROD, Honeywell, Inc. has attained the CERCLA cleanup goals and remedial action objectives for the Site.

As a result, based on information available as of this date, U.S. EPA has determined that the unacceptable levels of risk to current and future users of LEDC-owned parcels of land at the Site have been abated for industrial users. LEDC-owned parcels of land at the Site are ready for industrial use and the Site's remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as specified in the ROD.

U.S. EPA Region 5 issued this Ready for Reuse Determination, effective October 26, 2004.

By: Richard C Karl

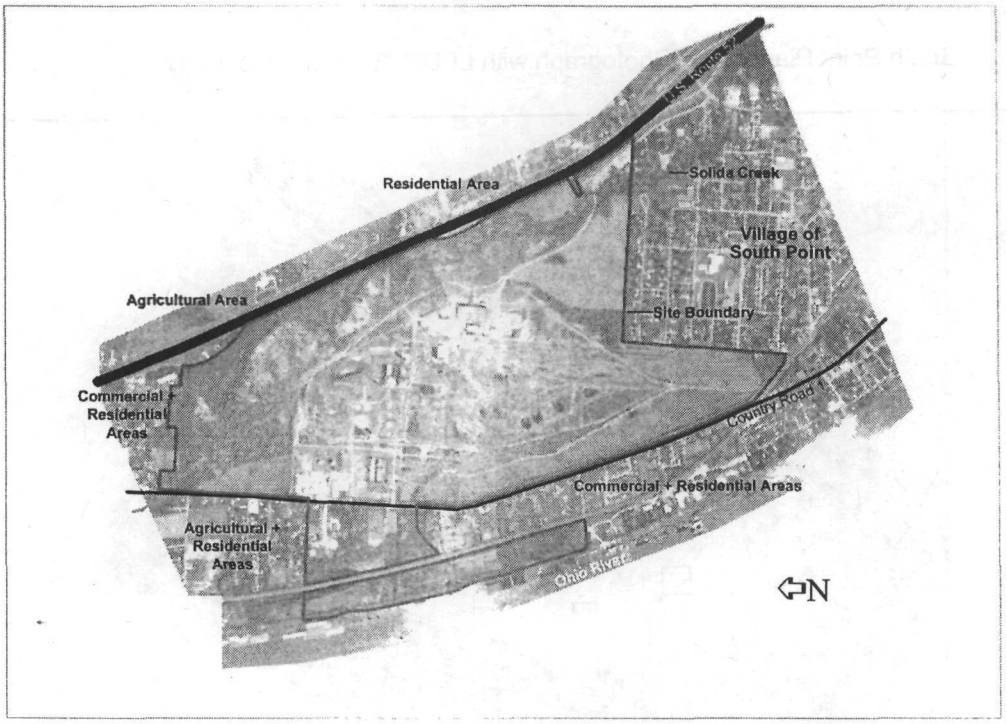
Richard C. Karl, Director
Superfund Division
United States Environmental Protection Agency
Region 5

Documents pertaining to the Site and the RfR determination are part of the Administrative Record for the Site, which is available for review at Briggs Lawrence Library in South Point, OH and at U.S. EPA Region 5 offices in Chicago, IL. Additional information can be obtained from Nabil Fayoumi, the Site's Remedial Project Manager (RPM), who can be reached at 312.886.6840 or fayoumi.nabil@epa.gov.

II. Site and Parcel Location

The South Point Plant Superfund site is located in the Village of South Point, Lawrence County, Ohio, at 38° 26' N latitude and 82° 35' 30" W longitude. The Site is located between U.S. Route 52 to the east and the Ohio River to the west. The Site's western boundary includes 5,000 feet of Ohio River frontage. Solida Creek, a small intermittent stream, runs along the Site's eastern and northern boundaries, paralleling U.S. Route 52. Exhibit 1 shows a labeled aerial photograph of the Site and surrounding areas.

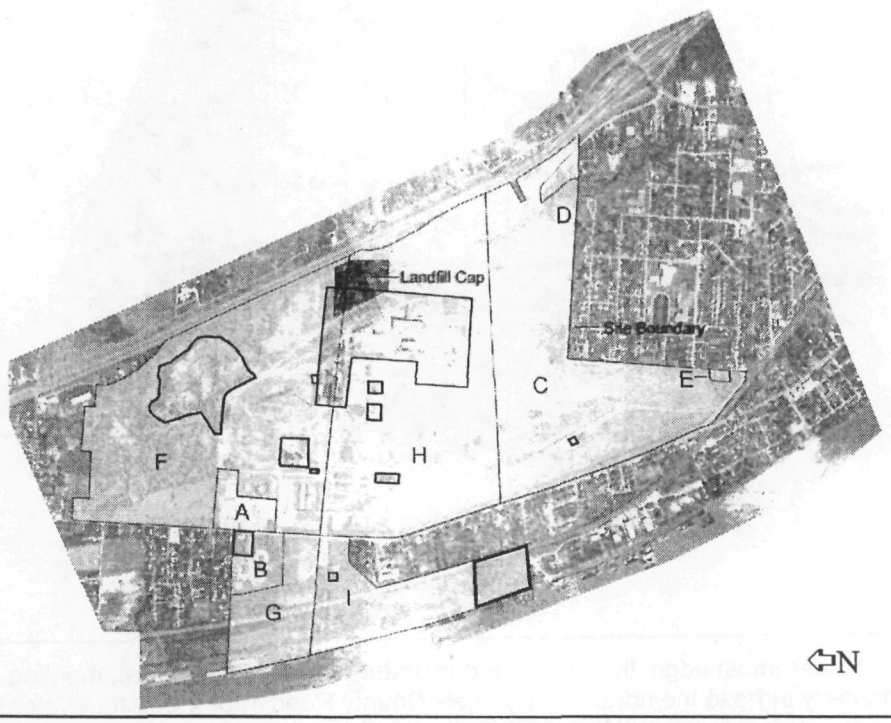
Exhibit 1. South Point Plant Aerial Photograph Showing Surrounding Land Uses



From the Site's southernmost edge, the Site boundary extends west for 400 feet, meeting County Road 1. The boundary turns to the north and parallels County Road 1 for 4,800 feet before turning west, extending for 600 feet to the N&W Railroad. On the river side of the railroad, the boundary turns to the southeast, extending parallel to the Ohio River for 1,200 feet, before extending southwest for 500 feet to the Site's southwest corner. The Site's western boundary extends to the north, along the Ohio River, for 3,400 feet. The Site's western boundary then extends east for 1,800 feet, crossing the N&W Railroad, and turns north after crossing County Road 1. The final portion of the Site's western boundary extends 1,500 feet along County Road 1, ending at the Site's northwest corner. The Site's northern boundary extends east from the Site's northwest corner for 2,000 feet, and the Site's eastern boundary then extends along U.S. Route 52 for 6,000 feet. At the end of the Site's eastern boundary, the Site's southern boundary turns west and extends for 2,400 feet. The southern boundary then turns south for 1,400 feet, returning to the Site boundary's southernmost edge.

The Site is surrounded to the north and south by residential properties, commercial properties, agricultural areas, and a little league field. U.S. Route 52 runs along the Site's eastern boundary, while Country Road 1 separates the Site's western river frontage from the remainder of the Site. The Site is not zoned – the Village of South Point's commercial, industrial, and residential districts do not extend beyond the downtown area, located adjacent to the Site's southern boundary. A deed restriction and restrictive covenants placed on the Site restrict the Site's uses to commercial and industrial uses (see Appendix D). Exhibit 2 shows the tax parcels – outlined in red – that are included, in whole or in part, in the LEDC-owned parcels of land at the South Point Plant Superfund site. LEDC-owned parcels of land at the Site are the only parcels of land included in the RfR determination. Parcels of land at the Site not owned by LEDC, as well as the fenced and capped portion of the Eastern Disposal Area, are not included.[2]

Exhibit 2. South Point Plant Aerial Photograph with LEDC Tax Parcel Overlay



Map Key			
Parcel Code	**Parcel Number**	**Parcel Code**	**Parcel Number**
A	13-123-0200.001	F	39-001-0100
B	15-139-0600.001	G	39-001-0200
C	16-070-0100	H	39-001-0300
D	16-0700100.001	I	39-001-0400

[2] In Exhibit 2, parcels of land at the Site that are not owned by LEDC are outlined in black.

Map Key			
Parcel Code	**Parcel Number**	**Parcel Code**	**Parcel Number**
E	16-070-0102		

III. Site Summary

Site and Contaminant History

The South Point Plant Superfund site is a 610-acre site located in Perry Township in the Village of South Point, Ohio. The Site was listed on the National Priorities List (NPL) in September 1984. Soil and groundwater contamination from on-site munitions, fertilizer, coal, and ethanol industries affected several areas within the Site's boundaries; the majority of the Site's acreage was never contaminated.

Operations at the Site began in 1943, when Buckeye Munitions built the South Point Plant for the production of ammonium nitrate explosives for the federal government. Allied Chemical, Inc. purchased the Site in 1946 and produced ammonia, urea, nitrogen fertilizer solution, melamine, formaldehyde, and urea formaldehyde mixtures until 1978. Ashland Oil, Inc., purchased the facility in 1979. Ashland Oil demolished and removed many of the existing plant's structures and constructed a coal-water fuel pilot plant and a pitch prilling test plant. Both the pilot plant and the test plant have been dismantled. In 1981, South Point Ethanol acquired an 80-acre tract in the middle of the former production area for ethanol production. In 1985, Cardox, a division of the Air Liquide Corporation, began leasing a portion of the South Point Ethanol tract for liquid carbon dioxide production. South Point Ethanol ceased operation in August 1995. Air Liquide discontinued operation in January 1997. U.S. EPA identified Allied-Chemical, Inc., (now Honeywell, Inc.), Ashland Oil, Inc., (now Ashland, Inc.), Ashland Ethanol, Inc., and South Point Ethanol as the Site's potentially responsible parties (PRPs). Honeywell, Inc. is responsible for the continuing operation and maintenance of the remedy at the Site.

From 1943 to the mid-1980s, site refuse, coal cinder, laboratory chemicals, asbestos insulation materials, waste lubrication oils, and by-product and off-specification solids (such as ammonium nitrate, urea, and melamine) were deposited on-site. Industrial manufacturing activities were centered at two areas, the Mid-Plant Area and the Coke Oven Gas Blowdown Area, on the Site. Sampling at the Site indicated that there were five localized areas of soil contamination where waste materials were stored or industrial manufacturing activities took place. U.S. EPA sampling at the Site in 1993 also indicated that the groundwater underneath the Site was contaminated. Contaminants of concern found in the Site's soils and groundwater included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), waste specific compounds (ammonia, nitrate/nitrite, and sulfate), and metals (arsenic, barium, beryllium, cadmium, copper, and selenium).

Summary of Cleanup Activities

Exhibit 3 shows a time line of U.S. EPA Activities performed to date at the South Point Plant

06/1981	Site brought to attention of U.S. EPA
04/1983	Site Inspection
04/1983	Preliminary Assessment
09/1983	Site proposed for listing on U.S. EPA's National Priorities List (NPL)
09/1984	Site listed on NPL
04/1987	Administrative Order on Consent
02/1993	Baseline Risk Assessment
08/1994	Remedial Investigation
06/1997	Feasibility Study
09/1997	Record of Decision
03/2001	Remedial Design Report
12/2001	Remedial Actions at the Site
12/2001	Preliminary Closeout Report for the Site
10/2002	Construction Completion Report
05/2003	Revised Construction Completion Report

Appendix B provides a glossary of terms.

Superfund site.

Exhibit 3. Time Line of U.S. EPA Activities Performed to Date at the South Point Plant Superfund Site

U.S. EPA selected a remedy in the Site's 1997 ROD. All of the potential remedies considered for the Site assumed that the likely future reuse of the Site would be for industrial purposes.

The Site's selected remedy included institutional controls, soil excavation and disposal, on-site containment and consolidation, and the continued pumping, testing, and discharge of the Site's groundwater into the Ohio River to address the soil and groundwater contamination.

Contaminated soils were placed under a dual barrier cap on a portion of the Eastern Disposal Area, a 13-acre area on the Site's eastern edge. The Site's groundwater is being pumped, tested, and discharged into the Ohio River under a site-wide NPDES permit. U.S. EPA's remedial goals for groundwater are long-term (approximately ten years) and have not yet been achieved.

The remedial design for the South Point Plant Superfund site included a modification to the remedy selected in the Site's ROD. The remedy originally required the placement of single-barrier caps on portions of both Disposal Area D and the Eastern Disposal Area. In 1998, Allied-Chemical (now Honeywell, Inc.) requested that contaminated soils and waste from Disposal Area D be consolidated under a dual-barrier cap located in the southern portion of the Eastern Disposal Area.[3] Disposal Area D would then be backfilled with clean soil. U.S. EPA approved the remedy modification request and designated the modification as a minor alteration to the ROD.

Once U.S. EPA approved the work plan for the Site's remedial design in March 2001, remedial actions to address soil and groundwater contamination at the South Point Plant Superfund site were initiated in May 2001. The Site's remediation took eight months and was completed in December 2001. A Preliminary Closeout Report was issued by U.S. EPA in December 2001 and a revised Construction Completion Report was completed in May 2003. The Site's Final Closeout Report will be issued by U.S. EPA after the Site's groundwater remedial goals have been met.

Redevelopment/Reuse History

The current owners of the Site include Lawrence Economic Development Corporation, which is developing an industrial park called The Point on its property. The parcels of land at the Site owned by LEDC are the subject of this RfR determination (see Exhibit 2). The parcels of land at the Site owned by Biomass, Inc., which owns 14 noncontiguous parcels of land at the Site and operates on-site disposal facilities, are not included in the RfR determination.[4]

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[3] Single-barrier caps would have consisted of a two-foot thick layer of clay. Adequate sources of clay could not be identified at the Site, so a dual-barrier cap consisting of a flexible membrane liner and a geosynthetic clay liner was selected for the southern portion of the Eastern Disposal Area.

[4] The parcels of land at the Site owned by Biomass, Inc. include areas where waste materials were stored or industrial manufacturing activities took place. The Site's selected remedy – institutional controls, soil excavation and disposal, on-site containment and consolidation, and the continued pumping, testing, and discharge of the Site's groundwater into the Ohio River – directly addressed the soil and groundwater contamination in these portions of the Site. These areas are not included in the RfR determination because the areas are not yet in compliance with the Site's institutional controls, which stipulate the revegetation of these areas to address soil erosion.

IV. U.S. EPA's Basis for the Ready for Reuse (RfR) Determination

Background

The South Point Plant Superfund site RfR determination is based on U.S. EPA documents produced during the course of remedial activities at the Site. These documents provide evidence that the Site is ready for industrial use and that the Site's remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as specified in the ROD. The RfR determination is based primarily on the Site's baseline risk assessment, completed in February 1993 as a component of the Site's remedial investigation. Additional documents providing information about the Site's remedy, operation and maintenance requirements, and limitations include: the ROD, Preliminary Closeout Report, and Construction Completion Report. These reports can be found in the Site's Administrative Record, which is available for review at the Briggs Lawrence Library in South Point, OH and at U.S. EPA Region 5 offices in Chicago, IL.

The Site's baseline risk assessment (BLRA) analyzed the cumulative risks associated with using the South Point Plant Superfund site for industrial purposes and determined that the Site did not pose an unacceptable risk to industrial users, but did pose an unacceptable risk to trespassers and on-site residents. Prior to remediation, the Site's 1997 ROD, which describes the remedy selected for the Site, concluded that "it is reasonably anticipated that future use at the Site will remain industrial."

U.S. EPA's construction and post-construction completion reports confirm the successful remediation of the South Point Plant Superfund site. The Site's Preliminary Closeout Report states that the Site's remedy has reached "construction completion," meaning that all remedy components have been built and are operational. The Site's Construction Completion Report describes the construction of the remedy and operation and maintenance requirements. U.S. EPA asserts that the Site's remedy is functioning according to expectations.

Description of Risks

A baseline risk assessment (BLRA) was prepared for the South Point Plant Superfund site in 1993 as part of the remedial investigation. The term "baseline" refers to the risk assessment's assumption that remedial work had not been performed at the Site and that access to the Site was not limited in any way. Individual exposure, dose, and risk calculations were developed for three populations: trespassers, industrial workers, and residents.

These calculations were then used to develop cumulative risks for the active and inactive areas of the Site. The active area, which includes source areas of the Site where industrial activities were concentrated, comprises the Mid-Plant Area and the Coke Oven Gas Blowdown Area. The inactive area, which includes areas of the Site where waste was disposed of, comprises Disposal Area D, the Northern Fly Ash Ponds, and the Eastern Disposal Area.

The BLRA indicated unacceptable levels of cumulative risk (based on either cancer risk or an index of other health effects from long-term exposure) for on-site residents and trespassers. Cumulative risk levels for industrial workers did not exceed the risk ranges. Unacceptable risks identified for on-site residents and trespassers at the Site included human exposure to chloride, nitrate, and sulfate, with lesser amounts of the heavy metals iron and manganese, through groundwater, and heavy metals, including arsenic, and lesser amounts of chloride, nitrate, ammonium, and sulfate, through surface soil.

The BLRA also indicated that chemical concentrations at the Site are such that potential risks to plants, aquatic life, and terrestrial wildlife are expected to be minimal. Observations of the character and composition of the terrestrial and aquatic communities suggest that the Site is not posing a risk to surrounding ecosystems.

Appendix A provides additional information on the Site's 1993 BLRA.

V. Ongoing Limitations and Responsibilities Previously Established by U.S. EPA

Institutional and Engineering Controls

The revised Construction Completion Report, issued in May 2003, describes the current remedial components for the South Point Plant Superfund site. The ROD and Construction Completion Report require that, in order for the remedy implemented for the South Point Plant site to remain protective of human health and the environment, the following institutional controls must be followed:

1. there must be no use or public access allowed on the fenced and capped southern portion of the Site's Eastern Disposal Area, where on-site wastes were consolidated;

2. the fly ash deposits in the Site's Northern Fly Ash Ponds must remain stabilized;

3. U.S. EPA and its contractors must be allowed access to all on-site monitoring wells at all times; and

4. potable groundwater use on the Site is prohibited.

Potentially responsible parties Ashland, Inc., Ashland Ethanol, Inc., and South Point Ethanol placed a deed restriction and restrictive covenants on the South Point Plant Superfund site as part of a 1998 Consent Decree with U.S. EPA. The deed restriction and restrictive covenants restrict uses at the Site to commercial/industrial uses and require that any activities on the property must not disturb the Site remedy. Honeywell, Inc., is responsible for monitoring the Site's deed restrictions and restrictive covenants.

The deed restriction reads as follows, in part:

> "No building, structure, or other object shall be built or placed on the Site that would disturb the cap over the landfills or would otherwise disturb any component of the remedy at the Site. Further, no one shall use surface or groundwater from the Site for any purpose, including but not limited to human or animal consumption."

The seven restrictive covenants specify that the Site's future uses shall be limited to commercial/industrial purposes only and reiterate the specifications described in the deed restriction in greater detail.

The Consent Decree states that the restrictive covenants will operate and be enforced as follows:

> "Said covenants shall run with the land, shall be binding upon any and all successors in interest, and all assignees, lessees, sublessees, operators, tenants, licensees and agencies, and any and all persons who acquire any interest in the property, and shall be for the benefit of Ashland, Inc., Ashland Ethanol, Inc., and South Point Ethanol, An Ohio General Partnership, the United States Environmental Protection Agency ("EPA"), and shall be privileged to enforce these covenants by appropriate action in a court of competent jurisdiction."

The full text of the Site's deed restriction and restrictive covenants is provided in Appendix D.

Operation and Maintenance Requirements

Operation and maintenance activities are designed to ensure that the remedy is operating and continues to operate properly. The components of the remedy requiring ongoing operation and maintenance activities are: the Eastern Disposal Area's cap and fencing, erosional controls at remediated areas of Disposal Area D, the Mid-Plant Area, and the Coke-Oven Gas Blowdown Area, surface stabilization controls at the Northern Fly Ash Ponds, and the Site's groundwater monitoring and pumping system.

Quarterly visual inspections monitor the Eastern Disposal Area's cap and fencing, erosional controls at remediated areas, and surface stabilization controls at the Northern Fly Ash Ponds. Operation and maintenance activities for the Site's groundwater monitoring and pumping system include the inspection and maintenance of groundwater extraction wells, and monitoring of groundwater flow and quality. Groundwater monitoring consists of measuring levels of ammonia, arsenic, beryllium, cadmium, copper, manganese, nickel, and nitrate. Annual reports assess the Site's hydraulic gradients, contaminant concentration trends, volumes of pumped water, and extracted contaminant mass. The groundwater monitoring and pumping system will remain operational until it can be demonstrated that the groundwater plumes have been remediated.

Honeywell, Inc., is responsible for continuing operation and maintenance of the remedy at the Site, with oversight provided by U.S. EPA and Ohio EPA. Specific information relating to ongoing operation and maintenance activities can be found in the Site's ROD, remedial design report, and operation and maintenance progress reports.

Reviews will be performed at the Site every five years to ensure that the remedy remains protective of human health and the environment. The first report is due in March 2007.

VI. Provisos

This RfR determination is a technical decision document and does not have any legally binding effect and does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities and/or for any potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including, but not limited to legal, equitable, or administrative rights. U.S. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with the Site, including but not limited to instances when new or additional information has been discovered regarding the contamination or conditions at the Site that indicate that the response and/or the conditions at the Site are no longer protective of human health or the environment for the types of uses identified in the Ready for Reuse Determination.

The types of uses identified as protective in this RfR determination remain subject to (i) applicable federal, state, and local regulation and to (ii) title documents, including, but not limited to, easements, restrictions, and institutional controls.

This RfR determination remains valid only as long as the requirements specified in the ROD, other response decision documents, and the land title documents are met.

APPENDIX A

Risk Assessment Summary

A risk assessment is defined by U.S. EPA as a qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants. A risk assessment characterizes the current or potential threat to public health and the environment that may be posed by chemicals originating at or migrating from a contaminated site. Information used in the risk assessment is taken from the remedial investigation, the stage of the U.S. EPA pipeline of activities that characterizes site conditions and determines the levels of contamination at a site.

At the South Point Plant Superfund site, a baseline risk assessment (BLRA) was prepared in 1993 as part of the remedial investigation. The term "baseline" indicates the risk assessment's assumption that remedial work had not been performed at the Site and that access to the Site was not limited in any way. Individual exposure, dose, and risk calculations were developed for three populations: trespassers, industrial workers, and residents. Superfund guidance requires that U.S. EPA evaluate a hypothetical residential exposure, however unlikely.

These calculations were then used to develop cumulative risks for the active and inactive areas at the Site. The active area, which includes source areas of the Site where industrial activities were concentrated, comprises the Mid-Plant Area and the Coke Oven Gas Blowdown Area. The inactive area, which includes areas of the Site where waste was disposed of, comprises Disposal Area D, the Northern Fly Ash Ponds, and the Eastern Disposal Area. The BLRA evaluated potential risks to human health and the environment using two measures: Excess Lifetime Cancer Risks (ELCRs) and Hazard Indices (HIs).

ELCRs describe whether exposure to carcinogenic (cancer-causing) contaminants at a site poses an unacceptable health risk to humans. ELCRs are expressed numerically, e.g, 1×10^{-4} or 1×10^{-6}. Carcinogenic risk expressed as 1×10^{-4} means that one out of 10,000 people exposed to contamination over a 70-year lifetime could potentially develop cancer as a result of the exposure.

A carcinogenic risk of 1×10^{-6} means that one out of 1,000,000 people exposed over a 70-year lifetime could potentially develop cancer as a result of the exposure. The carcinogenic risk range established under CERCLA designates risks less than 10^{-4} to 10^{-6} as acceptable and protective of human health. Risks greater than this range indicate that the risks pose an unacceptable carcinogenic risk to human health.

The hazard index (HI) describes whether exposure to non-carcinogenic contaminants at a site poses an unacceptable health risk to humans. Each HI represents the ratio between the estimated exposure dose and a reference dose. An HI greater than one indicates that the estimated exposure dose for that contaminant exceeds acceptable levels for protection against non-carcinogenic

health effects. An HI less than one indicates that, under U.S. EPA's Hazard Indices guidelines, the contaminants pose an acceptable risk to human health.

Exhibit 4 lists the cumulative potential risks identified for current populations exposed to contamination at the South Point Plant Superfund site. Exhibit 5 lists the cumulative potential risks identified for future populations exposed to contamination at the Site. Exposure scenarios where contaminants were determined to pose a potential health risk to current or future populations at the Site are marked in bold.

Exhibit 4. Cumulative Potential Risks for Current Exposed Populations

Current Populations	Cumulative Potential Risks for Current Populations			
	Inactive Area		Active Area	
	ELCRs	Hazard Index	ELCRs	Hazard Index
On-site Industrial Workers	7×10^{-6} (soil and groundwater)	0.2	8×10^{-6} (soil and groundwater)	0.1
On-site Adult Trespasser	9×10^{-5} (soil only)	**2.6**	1×10^{-4} (soil only)	0.7
On-site Child Trespasser	9×10^{-5} (soil only)	**2.6**	1×10^{-4} (soil only)	0.7

The cumulative risks indicated that the Site's contaminants did not exceed the carcinogenic risk range established under CERCLA for current and future exposed populations at the Site; ELCR values ranged between 10^{-4} to 10^{-6}. As Exhibit 4 and Exhibit 5 illustrate, the risk assessment conducted at the South Point Plant Superfund site indicated that the Site is safe for reuse in an industrial capacity. Within two exposure scenarios – an adult or child trespassing in the inactive area prior to the Site's remediation and any future resident of the Site – the constituents of concern did pose a potential non-carcinogenic risk greater than U.S. EPA's Hazard Indices guidelines.

Exhibit 5. Cumulative Potential Risks for Future Exposed Populations

Future Populations	Cumulative Potential Risks for Future Populations			
	Inactive Area		Active Area	
	ELCRs	Hazard Index	ELCRs	Hazard Index
On-Site Industrial Workers	6×10^{-6} (soil and groundwater)	0.5	7×10^{-6} (soil and groundwater)	0.5
On-Site Adult Resident	2×10^{-4} (soil, groundwater, surface water, and sediments)	**1.82**	2×10^{-4} (soil, groundwater, surface water, and sediments)	**1.72**
On-Site Child Resident	5×10^{-4} (soil, groundwater, surface water, and sediments)	**8.82**	3×10^{-4} (soil, groundwater, surface water, and sediments)	**6**

APPENDIX B

ABBREVIATIONS AND ACRONYMS

AR - Administrative Record
BLRA/BRA - Baseline Risk Assessment
CC - Construction Completion
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)
CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System
DOD - U.S. Department of Defense
DOE - U.S. Department of Energy
DOI - U.S. Department of Interior
ELCR - Excess Lifetime Cancer Risk
ESD - Explanation of Significant Differences
ESI - Expanded Site Inspection
FCOR - Final Closeout Report
FS - Feasibility Study
GIS - Geographic Information System
HI - Hazard Index
HRS - Hazard Ranking System
HWS - Hazardous Waste Sites
IC - Institutional Control
LEDC - Lawrence Economic Development Corporation
NER - National Exposure Registry
NIH - National Institutes of Health
NOID - Notice of Intent to Delete
NOD - Notice of Deletion
NPDES - National Pollutant Discharge Elimination System
NPL - (N)ational (P)riorities (L)ist of Superfund Hazardous Waste Sites
O&M - Operation and Maintenance
OEPA - Ohio Environmental Protection Agency
OERR - Office of Emergency Response and Remediation
OSWER - Office of Solid Waste and Emergency Response
OU - Operable Unit
PA - Preliminary Assessment
PCOR - Preliminary Closeout Report
PHA - Public Health Assessment
PRP - Potentially Responsible Party
RA - Remedial Action
RCRA - Resource Conservation and Recovery Act of 1976
RD - Remedial Design
RfR - Ready for Reuse Determination
RI - Remedial Investigation
ROD - Record of Decision
RPM – Remedial Project Manager
SARA - Superfund Amendments and Reauthorization Act of 1986
SI - Site Inspection
SNAP - Superfund National Assessment Program Database
SRI - Superfund Redevelopment Initiative
SVOC - Semi-Volatile Organic Compound
TEAM - Total Exposure Assessment Methodology
TRI - Toxic Release Inventory
TSDF - Treatment, Storage, and Disposal Facility
U.S. EPA - United States Environmental Protection Agency
VOC - Volatile Organic Compound

APPENDIX C

GLOSSARY

Baseline Risk Assessment (BLRA): A qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants at a site. A risk assessment characterizes the current or potential threat to public health and the environment that may be posed by chemicals originating at or migrating from a contaminated site.

Carcinogenic Risk: Risk that is obtained by an exposure event, condition, or effect that causes cancer.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): CERCLA, commonly referred to as Superfund. The law authorizes the federal government to respond directly to releases, or threatened releases, of hazardous substances that may endanger the public health, welfare, or the environment. CERCLA also enables U.S. EPA to take legal action to force parties responsible for causing the contamination to remediate those sites, or reimburse Superfund for the cost of remediation.

Construction Completion (CC): Construction completion identifies completion of remedial activities. In this stage, the physical construction of all remedial actions at a site is complete, all immediate threats have been addressed, and all long-term threats are under control.

Deed restrictions: Restrictions placed on a property's deed that control the use of the property. Restrictions travel with the deed, and cannot generally be removed by new owners.

Dermal absorption: Absorption through the skin.

Discovery: Process by which a potential hazardous waste site is brought to the attention of U.S. EPA. The process can occur through several mechanisms, such as community contact or referral by another government agency.

Ecological risk assessment: Assessment of the baseline risks posed by a site to ecological receptors.

Engineering controls: Engineering controls eliminate or reduce exposure to a chemical or physical hazard through the use or substitution of engineered machinery or equipment. An example of an engineering control is a fence.

Expanded Site Inspection (ESI): Functions performed to collect additional site data beyond that required for Hazard Ranking System (HRS) scoring, in order to expedite the Remedial Investigation/Feasibility Study (RI/FS) process for National Priorities List (NPL) sites. In addition to an evaluation of pathways and receptors, an ESI includes site and source characterization.

Explanation of Significant Differences (ESD): A significant change to a Record of Decision (ROD) that does not fundamentally alter the remedy. An ESD may be initiated by U.S. EPA or by site PRPs.

Exposure pathways: Exposure pathways are means by which contaminants can reach populations of people, plants, or animals. Exposure pathways include groundwater, surface water, soil exposure, and air migration.

Feasibility Study (FS): A study of a hazardous waste site intended to: (1) evaluate alternative remedial actions from technical, environmental, and cost-effectiveness perspectives; (2) recommend cost-effective remedial actions; and (3) prepare a conceptual design, cost estimate, and preliminary construction schedule.

Fugitive landfill gas: Landfill-generated gas that could reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

Hazard Index (HI): The hazard index (HI) describes whether exposure to non-carcinogenic contaminants at a site poses an unacceptable health risk to humans. Each HI represents the ratio between the estimated exposure dose and a reference dose. An HI greater than one indicates that the estimated exposure dose for that contaminant exceeds acceptable levels for protection against non-carcinogenic health effects. An HI less than one indicates that the contaminants do not pose a risk to human health.

Hazard Ranking System (HRS) Scoring: The HRS is the screening mechanism used to place sites on the NPL. In order for a site to be listed, it must have: 1) contaminants listed on U.S. EPA's Target Compound List of sufficient concentration to warrant concern; 2) a sensitive receptor population that would be negatively impacted by the contaminants; and 3) pathways of exposure that would introduce the contaminant into the sensitive receptor population. Theoretically, a site meeting these conditions would score 28.5 or higher on the HRS, the threshold for NPL listing. The report detailing the findings of a site's scoring is referred to as the "HRS Scoring Package."

Institutional Controls (ICs): ICs are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land or resource use.

National Priorities List (NPL): Sites are listed on U.S. EPA's National Priorities List (NPL) upon completion of Hazard Ranking System screening and public solicitation of comments about the proposed site. The identification of a site for the NPL is intended primarily to guide U.S. EPA in: identifying sites that warrant further investigation to assess the nature and extent of human health and environmental risks; identifying potential CERCLA-financed remedial actions; notifying the public about sites determined to warrant further investigation by U.S. EPA; and serving notice to potentially responsible parties that U.S. EPA may initiate CERCLA-financed remedial actions.

NPL site deletions: With state concurrence, U.S. EPA determines when no further response is required at a site to protect human health or the environment. U.S. EPA approves a "close-out" report verifying that response actions have been taken or that no action is required. The Agency then publishes a deletion notice in the *Federal Register*.

NPL site listing process: The NPL is a list of the most serious sites identified for possible long-term remediation. A final NPL site is added when U.S. EPA issues a final rule in the *Federal Register*, which enables U.S. EPA to use Trust Fund monies to pay for long-term remedial actions. U.S. EPA issues a proposed rule in the *Federal Register* to solicit comments on proposed NPL sites. U.S. EPA responds to comments and adds sites to the NPL that continue to meet requirements for listing.

Potentially Responsible Parties (PRPs): The Superfund law (CERCLA) allows U.S. EPA to respond to releases or threatened releases of hazardous substances into the environment. Under CERCLA, PRPs are expected to conduct or pay for a site's remediation. The Superfund enforcement program identifies site PRPs; negotiates with PRPs to fund and manage the site's remediation; and recovers U.S. EPA remediation costs from PRPs.

Preliminary Assessment (PA): A PA is an investigation of a site's conditions to ascertain the source, nature, extent, and magnitude of contamination.

Preliminary Close Out Report (PCOR): A precursor to a site's final closeout report, a site's PCOR is a report submitted by the site's Remedial Program Manager (RPM) verifying that the conditions of the site comply with the Record of Decision (ROD)'s findings and design specifications and that activities performed at the site are sufficient to achieve protection of public health and the environment.

Operation and Maintenance (O&M): O&M activities are conducted after remedial actions are complete at a site in order to ensure that remedies remain effective and operational over time.

Remedial Action (RA): The implementation of a permanent resolution to address a release or potential release of a hazardous substance from a site.

APPENDIX D

SITE DEED RESTRICTION AND RESTRICTIVE COVENANTS

VOL 0015 PG 313

NOTICE OF CONSENT DECREE
IMPOSING LIMITATIONS AND RESTRICTIONS ON PROPERTY

This Notice, dated as of March 24, 1999, is hereby given of that certain Consent Decree (the "Consent Decree") entered on November 19, 1998 by the United States District Court for the Southern District of Ohio in Civil Action No. 98 - 700 involving the United States of America (acting on behalf of the United States Environmental Protection Agency), AlliedSignal, Inc. (f/k/a Allied Chemical Corporation), Ashland Inc. (f/k/a Ashland Oil, Inc.), Ashland Ethanol, Inc. and South Point Ethanol. The Consent Decree imposes certain limitations and restrictions including, without limitation, those restrictions and limitations imposed by Appendix F of the Consent Decree (copy attached), on property located in Lawrence County, Ohio owned by Ashland Inc., Ashland Ethanol, Inc. and/or South Point Ethanol.

The restrictions and limitations of the Consent Decree, particularly Appendix F, are incorporated by Ashland Inc., Ashland Ethanol, Inc. and/or South Point Ethanol into that certain property, described on Exhibit A, which is attached hereto, that was conveyed by Allied Chemical Corporation to Ashland Oil, Inc. by deed dated May 21, 1979 and recorded in Volume 457, Page 689, of the deed records of the Recorder's Office of Lawrence County, Ohio, a portion of which property was conveyed as follows:

(1) by Ashland Oil, Inc. to Ashland Ethanol, Inc. by deed dated December 31, 1981 and recorded in Volume 476, Page 330, of the deed records of the Recorder's Office of Lawrence County, Ohio which was subsequently conveyed by Ashland Ethanol, Inc. to South Point Ethanol by deed dated December 31, 1981 and recorded in Volume 476, Page 360, of the deed records of the Recorder's Office of Lawrence County, Ohio; said property being more particularly described on Exhibit B which is attached hereto; and

(2) by Ashland Oil, Inc. to South Point Ethanol by deed dated June 14, 1984 and recorded in Volume 493, Page 615, in the deed records of the Recorder's Office of Lawrence County, Ohio; said property being more particularly described on Exhibit C which is attached hereto.

The Consent Decree does not affect or involve the following property that was a portion of the property originally conveyed by Allied Chemical Corporation to Ashland Oil, Inc.:

(1) that certain property conveyed by Ashland Oil, Inc. to the Board of County Commissioners of Lawrence County, Ohio by deed dated November 2, 1982 and recorded in Volume 480, Page 794 of the deed records of the Recorder's Office of Lawrence County, Ohio;

(2) that certain property conveyed by Ashland Oil, Inc. to Ray Curtis Bailey and Raymond Bailey by deed dated June 4, 1984 and recorded in Volume 493, Page 530, of the deed records of the Recorder's Office of the Lawrence County, Ohio;

(3) that certain property conveyed by Ashland Oil, Inc. to the South Point, Ohio Board of Education by deed dated October 10, 1984 and recorded in Volume 496, Page 477, of the deed records of the Recorder's Office of the Lawrence County, Ohio;

(4) that certain property conveyed by Ashland Inc. to the Lawrence County Economic Development Corporation by deed dated July 7, 1997 and recorded in Volume 624, Page 789, of the deed records of the Recorder's Office of the Lawrence County, Ohio.

In witness whereof, the parties have caused this Notice of Consent Decree to be executed by properly authorized representatives as of the day and year first above written.

ASHLAND INC.
(f/k/a Ashland Oil, Inc.)

JMP David L. Hausrath
David L. Hausrath
Vice President and General Counsel

ASHLAND ETHANOL, INC.

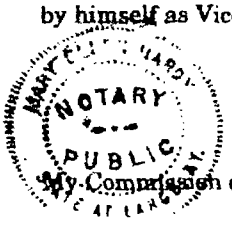
JMP Carl A. Pecko
Carl A. Pecko
President

SOUTH POINT ETHANOL

Bradley C. Hall
Bradley C. Hall
Chairman - - Management Committee

State of Kentucky)
) SS:
County of Kenton)

On this, the 24th day of March, 1999, before me, the undersigned officer, personally appeared David L. Hausrath, who acknowledged himself to be the Vice President and General Counsel of Ashland Inc., a Kentucky corporation, and that he, as such officer, being authorized so to do, executed the foregoing instrument for purposes therein contained, by signing the name of the corporation by himself as Vice President and General Counsel of Ashland Inc.



Mary Ellen Hardy
Notary Public

My Commission expires: July 14, 1999.

State of Kentucky)
) SS:
County of Kenton)

On this, the 24th day of March, 1999, before me, the undersigned officer, personally appeared Carl A. Pecko, who acknowledged himself to be the President of Ashland Ethanol, Inc., a Delaware corporation, and that he, as such officer, being authorized so to do, executed the foregoing instrument for purposes therein contained, by signing the name of the corporation by himself as President, of Ashland Ethanol, Inc.

Mary Ellen Hardy
Notary Public

My Commission expires: July 14, 1999.

State of Pennsylvania)
) SS:
County of Montgomery)

On this, the 8th day of April, 1999, before me, the undersigned officer, personally appeared Bradley C. Hall, who acknowledged himself to be the Chairman of the Management Committee of South Point Ethanol, an Ohio general partnership, and that he, as such officer, being authorized so to do, executed the foregoing instrument for purposes therein contained, by signing the name of the partnership by himself as Chairman of the Management Committee of South Point Ethanol.

Notary Public

My Commission expires: _____.

Notarial Seal
Lynn S. Quinn, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires Sept 6 1999

LYNN S. QUINN
COMMONWEALTH OF PENNSYLVANIA
NOTARY PUBLIC

LAWRENCE COUNTY, OHIO
PRESENTED FOR RECORD AT:
99 MAY 11 PM 1:20 003998
OR BK 15 PAGE 313
SUE ANN DEEDS, RECORDER
66.00
8.00 MN
74.00

This Instrument Prepared By:

J. Michael Peffer, Esq.
50 E. RiverCenter Blvd.
Covington, KY 41012-0391

APPENDIX F: DEED RESTRICTIONS AND RESTRICTIVE COVENANTS

Ashland Inc., Ashland Ethanol, Inc., and South Point Ethanol, An Ohio General Partnership, agree to enact the following deed restrictions and restrictive covenants on its property (as described in the Consent Decree, Paragraphs 9A and 9B):

Deed Restrictions

1. No building, structure or other object shall be built or placed on the Site that would disturb the cap over the landfills or would otherwise disturb any component of the remedy at the Site. Further, no one shall use surface or ground water from the Site for any purpose, including but not limited to human or animal consumption.

Restrictive Covenants

1. The owner and/or occupant of the above-described premises covenants that he/she shall not engage in, cause or allow the drilling, construction, installation, development, operation or use of any well for potable water at, on or within said property;

2. The owner and/or occupant of the above-described premises covenants that he/she shall not engage in, cause or allow drilling, construction, installation, development, operation on or within said property that will damage, disturb, displace or destroy the protective cap or any other component of the remedy that has been placed on or within said property;

3. The owner and/or occupant of the above-described premises covenants that he/she shall not engage in, cause or allow the construction, installation, development, operation or use of the surface water at, on or within said property;

4. The owner and/or occupant of the above-described premises covenants that each deed, title, lease or other instrument conveying an interest in said property shall contain and be subject to the foregoing restrictions;

5. The owner and/or occupant of the above-described premises covenants that he/she shall take all reasonable and appropriate measures to the extent of her property rights to prevent or preclude the drilling, construction, installation, development, operation or use of any well for potable water at, on or within said property by any other person; and

6. The owner and/or occupant of the above-described premises covenants that he/she shall limits its use to commercial/industrial purposes only.

Said covenants shall run with the land, shall be binding

upon any and all successors in interest, and all assignees, lessees, sublessees, operators, tenants, licensees and agents, and any and all persons who acquire any interest in the property, and shall be for the benefit of Ashland Inc., Ashland Ethanol, Inc., and South Point Ethanol, An Ohio General Partnership, the United States Environmental Protection Agency ("EPA"), Protection Agency, and shall be privileged to enforce these covenants by appropriate action in a court of competent jurisdiction.

EXHIBIT A

Being three Tracts of land situated in Perry Township, Lawrence County, and partially in the Village of South Point, Ohio and being part of Sections 29 and 32 and Fractional Sections 30 and 31 of T-2, R-17 of the Ohio River Survey and being more particularly described as follows:

TRACT NO. 1

Beginning at a cut cross in the centerline of County Road No. 1, said cut cross marking the corner of Sections 29, 30, 31 and 32 of T-2, R-17 of the Ohio River Survey;

thence, with the centerline of County Road No. 1 and the west line of Section 29, N5° 37' 00" E passing a "P.K." nail at 1049.92 feet, in all 2764.63 feet to a "P.K." nail;

thence, leaving the aforesaid Section line and continuing with the said centerline, 256.67 feet, on a curve to the left having a radius of 11,459.16 feet the chord of which bears N4° 58' 30" E. 256.66 feet, to a "P.K." nail;

thence with the aforesaid centerline, N4° 20' 00" E 218.24 feet to a railroad spike;

thence, leaving said centerline and with the line of James King Vol. 236, Pg. 273, S84° 55' 20" E, passing a concrete monument at 80.01 feet, in all 306.08 feet to a concrete monument on the west line of Lot No. 24 of the Ohio Valley Truck Farms, Plat Book 2, Page 214;

thence S5° 43' 13" W 162.65 feet to a concrete monument at the southwest corner of Lot No. 25;

thence S84° 05' 04" E 598.89 feet to a concrete monument at the southeast corner of Lot No. 37;

thence N5° 43' 40" E 80.75 feet to a concrete monument at the corner of Lots 36, 37, 48 and 49;

thence S84° 05' 14" E 599.58 feet to a concrete monument at the corner of Lots 60, 61, 72 and 73;

thence S5° 47' 33" W 83.19 feet to a concrete monument at the southwest corner of Lot No. 73;

thence S84° 39' 26" E 237.77 feet to a concrete monument on the south line of Lot No. 73;

thence, leaving the line of the Ohio Valley Truck Farm, S27° 43' 37" E 67.98 feet to an iron pin in the west right of way line of County Road 60;

thence S27° 43' 37" E 114.01 feet to a point on the east right of way line of County Road 60;

thence, with said right of way, S27° 43' 37" E 983.78 feet to a concrete monument;

thence 68.46 feet, on a curve to the left having a radius of 165.99 feet the chord of which bears S39° 32' 37" E 67.98 feet, to an iron pin;

thence N38° 38' 23" E 2.14 feet to a concrete monument 120 feet right of centerline Station 967 + 08.85 of U. S. Route 52;

thence, with the west right of way line of U.S. Route 52, S21° 49' 21" E, passing an iron pin on the west right of way line of County Road 60 at 123.40 feet, 161.49 feet in all to a concrete fence post 119.99 feet right of centerline Station 968 + 70.34;

thence S21° 49' 14" E 1329.66 feet to a concrete fence post 120 feet right of centerline Station 982 + 00;

thence S1° 31' 00" E 158.50 feet to a concrete monument 175 feet right of centerline Station 983 + 48.65;

thence S21° 49' 15" E 560.15 feet to a point 175 feet right of centerline Station 989 + 08.80;

thence S29° 11' 13" E 117.00 feet to an iron post 160 feet right of centerline Station 990 + 24.83;

thence S21° 49' 15" E 275.17 feet to a concrete monument 160 feet right of centerline Station 993 + 00;

thence S20° 52' 34" E 909.61 feet to an iron post 175 feet right of centerline Station 1001 + 67;

thence S21° 49' 15" E 483.00 feet to a concrete monument 175 feet right of centerline Station 1006 + 50;

thence S33° 53' 39" E 286.73 feet to a concrete monument 115 feet right of centerline Station 1009 + 30.38;

thence S21° 49' 15" E 494.32 feet to a concrete monument 115 feet right of centerline Station 1014 + 24.70;

thence 136.34 feet, on a curve to the left having a radius of 5207.93 feet the chord of which bears S22° 34' 15" E 136.34 feet, to a concrete monument 115 feet right of Centerline Station 1015 + 58.03;

thence 17.48 feet, on a curve to the left having a radius of 3934.72 the chord of which bears S23° 26' 53" E 17.48 feet, to a concrete fence post 115 feet right of Centerline Station 1015 + 75;

thence S66° 25' 29" W 330.00 feet to an iron post 445 feet right of Centerline Station 1015 + 75;

thence S23° 57' 19" E 55.83 feet to an iron post 445 feet right of Centerline Station 1016 + 25;

thence N65° 40' 29" E 330.00 feet to an iron post 115 feet right of Centerline Station 1016 + 25;

thence 889.98 feet, on a curve to the left having a radius of 3934.70 feet the chord of which bears S30° 48' 18" E 888.08 feet, to a concrete fence post 115 feet right of Centerline Station 1024 + 88.96;

thence 72.65 feet, on a curve to the left having a radius of 5207.93 feet the chord of which bears S37° 41' 08" E 72.65 feet, to a concrete monument 115 feet right of Centerline Station 1025 + 60;

thence S58° 19' 05" E 67.59 feet to a concrete monument 92 feet right of Centerline Station 1026 + 22.29;

thence S38° 46' 45" E 32.02 feet to a concrete monument 92 feet right of Centerline Station 1026 + 54.31;

thence, leaving the west right of way line of U. S. Rte. 52 and with the end of a frontage road, N84° 23' 17" W 32.27 feet to an iron pin corner to M. B. Rucker, Vol. 225, Pg. 87;

thence, with the lines of Rucker, C. Whitley, Vol. 297, Pg. 77, the Tri-State Bible College, Vol. 408, Pg. 482, the Tri-State View Subdivision Plat Book 3, Page 120, John Renfro, Vol. 219, Pg. 86, and the Sunny Valley Subdivision Plat Bk. 5, Pg. 124, N84° 23' 15" W, passing a concrete monument at 1609.28 feet, in all 2830.31 feet to a concrete monument;

thence, continuing with the Sunny Valley Subdivision, S5° 30' 29" W 1243.46 feet to a concrete monument;

thence, with the line of the South Point Christian Church, Vol. 305, Page 90, 55° 31' 40" W 299.86 feet to a concrete monument;

thence S5° 29' 30" W 699.63 feet to a concrete monument on the South line of Section 32;

thence, with the south line of Section 32, N84° 29' 19" W 100.54 feet to a concrete monument on the east right of way line of the Norfolk & Western Railroad;

thence, with said right of way, N48° 54' 39" W 791.85 feet to a "P.K." nail at the centerline of the former "Ohio River Road" from which a concrete monument bears N63° 03' 40" E 80.21 feet;

thence N22° 39' 51" W 1030.13 feet to a "P.K." nail on the centerline of said road from which a concrete monument bears N69° 14' 55" E 80.04 feet;

thence N18° 50' 49" W 1459.50 feet to a "P.K." nail on the centerline of said road from which a concrete monument bears N77° 19' 15" E 80.19 feet;

thence N12° 27' 47" W 382.00 feet to a "P.K." nail on the centerline of County Road No. 1 from which a concrete monument bears N75° 49' 29" E 80.04 feet;

thence N15° 53' 25" W 1267.10 feet to a "P.K." nail on the centerline of County Road No. 1 from which a concrete monument bears N74° 06' 35" E 80.00 feet;

thence 536.64 feet, on a curve to the right having a radius of 1429.61 feet the chord of which bears N5° 08' 14" W 533.49 feet, to a "P.K." nail from which a concrete monument bears S84° 23' 00" E 80.00 feet;

thence N5° 37' 00" E, passing a "P.K." nail at 302.00 feet, in all 651.88 feet to the cut across point of beginning containing 533.205 acres and having all bearings based on the magnetic meridian of 1941.

TRACT NO. 2

Beginning at a cut cross in the centerline of County Road No. 1, said cut cross marking the corner of Sections 29, 30, 31 and 32, T-2, R-17 of the Ohio River Survey;

thence, with the centerline of County Road No. 1 and the east line of Section No. 31, S5° 37' 00" W 349.88 feet to a "P.K." nail in the centerline of County Road No. 1;

thence, leaving the centerline of County Road No. 1 and with the line of Margaret and James Ferguson, Vol. 166, Pg. 98, the following courses and distances, N84° 23' 29" W, passing as a witness a concrete monument at 50.00 feet, 270.90 feet to a concrete monument, S54° 01' 19" W 68.22 feet to an iron pin (reset), S45° 04' 04" W 113.70 feet to a stone, S48° 53' 49" W 258.45 feet to an iron pipe, S58° 12' 42" W 67.19 feet to an iron pin on the east right of way line of the Norfolk & Western Railroad;

thence, leaving the line of Ferguson and with the east right of way line of the Norfolk & Western Railroad 2002.81 feet on a curve to the right having a radius of 21,544.9 feet the following chords, N12° 07' 17" W 748.06 feet to a point on the south line of Section 30 from which a monument bears N84° 20' W 1.21 feet, N10° 59' 38" W 100.63 feet to a point, N9° 19' 30" W 1153.94 feet to a concrete monument (former car axle) corner to Andrew J. Dolin, Vol. 372, Pg. 289;

thence, leaving said right of way line and with the lines of Andrew J. Dolin, Kenneth McFann et al Vol. 312, Pg. 394, Gladys Dills, Vol. 398, Pg. 92 and Vol. 343, Pg. 381 and Robert B. and Anna J. Holbrook, Vol. 301, Page 54 and Vol. 207, Pg. 546, S84° 44' 48" E passing a stone at 534.32 feet and 880.56 feet, in all 918.54 feet to a stone corner to Wm. B. Scherer, Vol. 402, Pg. 403;

thence, with the lines of Scherer, S5° 36' 49" W 169.62 feet to a stone, S84° 43' 50" W passing a stone at 230.36 feet, in all 260.36 feet to a "P.K." nail on the centerline of County Road No. 1;

thence, with the said centerline (also being the east line of Section 30), S5° 37' 00" W 1049.92 feet to the cut across point of beginning containing 35.953 acres and having all bearings based on the magnetic meridian of 1941.

TRACT NO. 3

Beginning at a stone, on the west right of way line of the Norfolk & Western Railroad, which bears N84° 44' 48" W 107.78 feet from the concrete monument marking the Northwest corner of Tract No. 2 herein, said stone being the common corner of Ashland Oil & Refining Company, Vol. 206, Pg. 74;

thence, with the west right of way line of the Norfolk & Western Railroad, 1152.98 feet on a curve to the left having a radius of 21,649.9 feet the chord of which bears S9° 15' 07" E 1152.84 feet to an iron pin;

thence N84° 22' 39" W 5.22 feet to an iron pin;

thence 100.52 feet, on a curve to the left having a radius of 21,654.9 feet the chord of which bears S10° 54' 27" E 100.52 feet to an iron pin on the south line of Section 30;

thence S84° 20' 37" E 5.22 feet to an iron pin;

thence 1424.75 feet, on a curve to the left having a radius of 21,649.9 feet the following chords S12° 06' 39" E 806.47 feet to a point, S13° 59' 44" E 618.15 feet to an iron post from which a concrete monument bears N14° 49' W 1.43 feet, said iron post being 65 feet left of Valuation Station 121 + 74.5 and marking the point of curvature of the aforesaid right of way;

thence, continuing with said right of way, S14° 48' 50" E 326.55 feet to an iron post from which a concrete monument bears S86° 08' E 2.68 feet;

thence S85° 42' 50" W 5.09 feet to an iron post from which a concrete monument bears S88° 52' E 2.55 feet;

thence S14° 48' 50" E 310.71 feet to an iron post from which a concrete monument bears S89° 48' E 3.05 feet and another monument bears N17° 59' W 8.81 feet;

thence leaving the N & W right of way line S85° 42' 50" W 347.13 feet to a concrete monument on the top of the high bank of the Ohio River;

thence, down river and with the high bank the following courses and distances, N14° 50' 06" W 310.73 feet to an iron pin, N13° 38' 00" W 772.39 feet to a concrete monument, N12° 43' 45" W 1041.02 feet to a concrete monument, N10° 24' 49" W 100.04 feet to a stone, N8° 25' 40" W 1146.28 feet to a stone on the line of Ashland Oil & Refining Company, Vol. 206, Pg. 74.

thence, with said line S84° 44' 48" E 343.76 feet to the stone point of beginning containing 25.965 acres and having all bearings based on the magnetic meridian of 1941, there is also included those lands between the high bank and the mean low water of the Ohio River being an addition 15.2 acres for a total of 41.2 acres more or less;

there is excluded herein a tract of land RESERVED by Ashland Oil & Refining Company in Vol. 206, Pg. 183 and being more particularly described as follows:

beginning at a stone on the North line of Tract No. 3 which bears N84° 44' 48" W 343.76 feet from the herein described point of beginning;

thence, with said north line, S84° 44' 48" E 20.00 feet to an iron pin;

thence S8° 25' 40" E 20.00 feet to an iron pin;

thence N84° 44' 48" W 20.00 feet to an iron pin;

thence N8° 25' 40" W 20.00 feet to the stone point of beginning containing 0.009 acres.

The Solvay Process Company was merged into Allied Chemical & Dye Corporation on October 28, 1947, a copy of which certificate of merger was filed with the Secretary of State of Ohio. Allied Chemical & Dye Corporation thereafter, on April 28, 1958, by certificate filed with the Secretary of State of Ohio changed its named to Allied Chemical Corporation.

The total acreage for all three of the above described tracts being 610.3 acres more or less. A survey of this property was made on January 9, 1979 and revised on March 1, 1979 and April 19, 1979 by Lawrence R. Wells, Registered Professional Surveyor, Registration No. 6471.

The above-described three tracts are composed of the following Lawrence County, Ohio tax parcel numbers:

15-123-0200
15-139-0600
15-145-1500
15-145-1600
16-070-0100

EXHIBIT B

Nine (9) tracts or parcels of property in Perry Township and the Village of South Point in Lawrence County, Ohio, said tracts or parcels being more particularly described and shown as lots numbered 2 through 10 (herein called the "Lots"), on the plat of the survey, prepared by Laurence R. Wells, Professional Surveyor No. 6471, which is recorded in Plat Book 9 at page 101.

The Lots are composed of the following Lawrence County, Ohio tax parcel numbers:

15-123-0201
15-123-0202
15-123-0203
15-123-0204
15-145-1501
15-145-1502
15-145-1503
15-145-1504
15-145-1601
16-070-0101

EXHIBIT C

Four parcels of land in Perry Township, Lawrence County, Ohio:

Parcel I

Being part of Section 29, Township 2, Range 17, and being more particularly described as follows:

Commencing at the southwest corner of Section 29; thence, with the south line of Section 29, South 84° 19' 07" East 1,628.52 feet to a point on the west line of Lot No. 2 of those lands conveyed to South Point Ethanol by deed recorded in Volume 476 at Page 360; thence, with the west line of Lot No. 2, North 5° 37' 48" East 273.87 feet to a one-inch iron pipe; thence, with the north line of Lot No. 2, South 84° 22' 12" East 361.00 feet to a one-inch iron pipe being the true point of beginning of this description; thence North 5° 37' 48" East 36.56 feet to a 1" iron pipe; thence South 84° 22' 12" East 70.50 feet to a one-inch iron pipe; thence South 5° 37' 48" West 36.56 feet to a one-inch iron pipe on the north line of Lot No. 2; thence North 84° 22' 12" West 70.50 feet to the point of beginning, containing 0.059 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-123-0206

Parcel II

Being part of Section 29, Township 2, Range 17, and being more particularly described as follows:

Commencing at the southwest corner of Section 29; thence with the south line of Section 29, South 84° 19' 07" East 903.53 feet to a point; thence North 5° 37' 48" East 273.22 feet to a one-inch iron pipe, said iron pipe being the southwest corner of Lot No. 3 of those lands conveyed to South Point Ethanol of record in Volume 476 at Page 360 and also being the true point of beginning for this description; thence North 84° 22' 12" West 19.01 feet to a one-inch iron pipe; thence North 5° 37' 48" East 346.46 feet to a one-inch iron pipe; thence South 84° 22' 12" East 19.01 feet to a one-inch iron pipe at the northwest corner of Lot No. 3; thence, with the west line of Lot No. 3, South 5° 37' 48" West 346.46 feet to the point of beginning, CONTAINING 0.151 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-123-0207.

EXHIBIT C

Parcel III

Being part of Section 32, Township 2, Range 17, and being more particularly described as follows:

Commencing at the northwest corner of Section 32; thence with the north line of Section 32, South 84° 19' 07" East 1,989.52 feet to a point; thence South 5° 37' 48" West 1,749.25 feet to a one-inch iron pipe, said iron pipe being the southwest corner of Lot No. 2 of those lands conveyed to South Point Ethanol of record in Volume 476 at Page 360 and also being the true point of beginning of this description; thence North 84° 22' 12" West 20.00 feet to a one-inch iron pipe; thence North 5° 37' 48" East 635.00 feet to a one-inch iron pipe on the line of Lot No. 2; thence, with the line of Lot No. 2, South 5° 37' 48" West 20.00 feet to a one-inch iron pipe; thence, continuing with the line of Lot No. 2, North 84° 22' 12" West 305.00 feet to a one-inch iron pipe; thence, continuing with the line of Lot No. 2, South 5° 37' 48" West 615.00 feet to the point of beginning, CONTAINING 0.432 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-145-1505.

Parcel IV

Being part of Section 32, Township 2, Range 17, and being more particularly described as follows:

Commencing at the northwest corner of Section 32; thence, with the north line of Section 32, South 84° 19' 07" East 1,554.29 feet to a point; thence South 5° 37' 48" West 619.64 feet to a one-inch iron pipe, said iron pipe being the true point of beginning of this description and further being the southwest corner of Lot No. 9 of those lands conveyed to South Point Ethanol and recorded in Volume 476 at Page 360; thence, with the south line of Lot No. 9 South 84° 22' 12" East 118.66 feet to a point; thence, with the east line of Lot No. 9, North 5° 37' 48" East 123.83 feet to a one-inch iron pipe; thence, leaving the line of Lot No. 9, South 84° 22' 12" East 44.00 feet to a one-inch iron pipe; thence South 5° 37' 48" West 150.83 feet to a one-inch iron pipe; thence North 84° 22' 12" West 162.66 feet to a one-inch iron pipe; thence North 5° 37' 48" East 27.00 feet to the point of beginning, CONTAINING 0.226 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-145-1506.

South Point Superfund Site
Institutional Controls Investigation/Study
South Point, Lawrence County, Ohio
Civil Action No. C-1-98-700

March 17, 2006

Prepared for:

MACTEC Engineering and Consulting
c/o Honeywell International
1985 Douglas Drive North
MN10-2499
Golden Valley, MN 5422

Prepared by:

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Cox-Colvin
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ENVIRONMENTAL SERVICES

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1.0 Introduction

At the request of MACTEC Engineering and Consulting, Cox-Colvin & Associates, Inc. (Cox-Colvin) has performed an institutional controls (IC) investigation/study for Honeywell International's South Point Superfund Site in South Point, Lawrence County, Ohio. The investigation/study was undertaken as requested in USEPA's letter of February 15, 2006 to Mr. Chuck Geadelmann, P.E. of Honeywell International. It was conducted using USEPA guidance found in OSWER No. 9355.0-106, *Strategy to Ensure Institutional Control Implementation at Superfund Sites* (September 2004). The guidance places ICs into four categories: governmental controls (e.g. zoning, local ordinances); proprietary controls (e.g. easements, restrictive covenants); enforcement and permit tools (e.g. consent decrees and administrative orders); and, informational tools (e.g., notices filed in the land records, advisories). The goals of the IC investigation/study, as identified by USEPA in their February 15, 2005 letter, are: 1) to evaluate whether institutional controls currently exist that adequately implement the objectives/performance standards for the site; 2) to identify and recommend any corrective measures to existing ICs necessary for their effectiveness; and 3) to recommend any new or additional ICs necessary to achieve and maintain the objectives/performance standards for the site.

This document includes a presentation of the ICs in place at the South Point Superfund Site as well as a discussion of their effectiveness and monitoring. An evaluation of corrective measures necessary to make the ICs more effective is also presented. The documentation requested in the February 15, 2006 USEPA letter is also attached. This includes: 1) information showing the implementation of the ICs at each property parcel making up the South Point Superfund Site, including results of a title search conducted for each parcel; 2) maps showing the areas covered by each IC as well as GIS information for the areas covered; and 3) results of interviews with parcel owners regarding their knowledge of the ICs in effect at their properties.

2.0 South Point Remedy Overview

The South Point Superfund Site is located in Perry Township, in the Village of South Point, Lawrence County, Ohio on a relatively flat portion of an Ohio River terrace at an average elevation of 560 feet mean sea level (Figure 2-1). The site is within the eastern floodplain of the Ohio River. Along the east side of the site, Solida Creek, a small intermittent stream, flows southeast to northwest paralleling the bedrock valley walls. A small tributary to Solida Creek, Willow Creek, joins it east of the site. Solida Creek, Willow Creek, and the Ohio River represent the natural surface drainage near the site. The Ohio River flows

northward in the vicinity of the site and ultimately southwestward toward the Mississippi River.

The site, which covers approximately 610 acres, was occupied in 1943 by the federal government for the production of ammonium nitrate explosives. In 1946, Allied Chemical purchased the site and produced ammonia, urea, nitrogen fertilizer solution, melamine, formaldehyde, and urea formaldehyde liquids until 1978. Ashland Oil Company purchased the site in 1979. Subsequent to the purchase of the site, Ashland demolished and removed many of the site structures and constructed a coal-water fuel pilot plant and a pitch prilling test plant that formed pitch into small pellets. Both the pilot plant and the test plant have been dismantled. In 1981, South Point Ethanol (SPE) acquired an 80 acre tract in the middle of the site for ethanol production. In 1985, Cardox, a division of the Air Liquide Corporation, began leasing a portion of the SPE tract for liquid carbon dioxide production. SPE and Cardox discontinued operation in 1995. Air Liquide continued to use the site for liquid carbon dioxide storage and transfer until 1997. In 1999, portions of the site owned by SPE were purchased by the Biomass Group, LLC. In 2001, portions of the site still owned by Ashland were sold to Lawrence Economic Development Corporation (LEDC). In addition, portions of the site have been leased for agricultural purposes.

A Remedial Investigation/Feasibility Study (RI/FS) was conducted at the site between 1994 and 1997 to characterize the extent of contamination in the soil and groundwater at the site and evaluate potential remedial alternatives for the soil and groundwater media. On the basis of the RI/FS, the Record of Decision (ROD) for the site was issued on October 28, 1997. Remedial activities actually conducted at the site are highlighted below and shown on Figure 2-2. The remedial construction work specified below was conducted at the South Point site in 2001.

<u>Mid-Plant and Coke-Oven Gas Blowdown Areas</u>

- Soil and Waste Excavation:
  Mid-Plant Area and Coke-Oven Gas Blowdown Area.

- Soil and Waste Disposal:
  On-site consolidation in the Eastern Disposal Area of excavated material from the Mid-Plant Area.

  Off-site disposal of excavated materials from the Mid-Plant Area and the Coke Oven Gas Blowdown Area.

Disposal and Fly Ash Areas to the North

- Waste Disposal:
  Consolidation and placement of waste from Disposal Area D in Eastern Disposal Area.

- Waste Containment:
  Installation of a dual-barrier cover at the Eastern Disposal Area after soil and waste from the Mid-Plant Area, the coke-oven gas blowdown areas, and Disposal Area D had been placed and consolidated.

  Installation of surface controls (slope stabilization, erosion control, and enhancement of existing vegetation) at the Eastern Disposal Area and the Northern Fly Ash Ponds.

Ground Water

- Groundwater Containment:
  Containment of groundwater plumes exceeding performance standards with the existing pumping containment system.

- Discharge:
  Discharge of extracted water from the existing pumping containment system to the Ohio River.

A fence has been erected around the Eastern Disposal Area Landfill. The purpose of the fence is to protect the landfill cap from disturbance. Quarterly inspections of the site as required by the Operation and Maintenance Plan are performed to ensure that the remedy remains intact and that the property continues to be used for commercial/industrial purposes only.

3.0 Recording of Proprietary Institutional Controls

Proprietary ICs include deed restrictions, restrictive covenants, and other legal instruments that place limits on the use of the resources at a property. In accordance with the September 16, 1998 Consent Decree (between USEPA and Allied Signal, Inc., Ashland, Inc., Ashland Ethanol, and South Point Ethanol, Inc.), the ICs specified in the ROD included the use of proprietary controls consisting of deed restrictions, along with monitoring of these controls. Their purposes are: 1) to limit future site usage to industrial

activities; and 2) to lessen the chance for exposure of local populations to site contaminants. Implementation of the deed restrictions consisted of the filing of a Notice of Consent Decree Imposing Limitations and Restrictions of Property in the Lawrence County Recorders office on March 24, 1999, prior to the active remedial construction work. This notice broadly covered the three tracts of land shown of Figure 2-2 with the exception of four areas owned by the Lawrence County Board of County Commissioners, Ray and Raymond Bailey, the South Point Board of Education, and the LEDC[1]. A copy of the notice appears in Appendix A of this document. Appendix F of the notice (pages 317 and 318) include one deed restriction and six restrictive covenants that essentially prohibit "*the disturbance of the cap over the landfill or disturbance of any other component of the remedy at the site*". They also specify that the "*use of surface or ground water from the site for any purpose*" is prohibited and that the site will be used for *"commercial/industrial purposes only"*.

The South Point Superfund Site has been divided into eighteen (18) parcels. A search of the Lawrence County, Ohio Recorder's on-line records was performed by Shumaker, Loop & Kendrick, LLP. A summary of the division and transfer history of the South Point Superfund Site is presented in Appendix B. The parcels of land that are described in the Notice of Consent Decree filed on March 24, 1999 include thirteen (13) of those eighteen (18) parcels. Those thirteen (13) parcels are listed as number items 1, 7, 8 and 9 in the ownership summary at the end of Appendix B. The Notice of Consent Decree specifically states that the remaining five (5) parcels are not involved in the Notice.

The thirteen parcels are owned by four separate entities. These property owners are: Biomass Group, LLC.; LEDC; Kenneth and Carolyn Sue McGuire; and Martin and Cathy Meyer. The deed restriction and restrictive covenants are specifically referenced in the LEDC and Biomass Group deeds, and generally referenced in the Meyer and McGuire deeds. The property owners were contacted during the development of this report to determine if they were aware of the deed restriction and restrictive covenants on their properties. Biomass Group and LEDC, are aware of the restrictions. Meyer was not aware of the restrictions, but was not planning any activities that would have been inconsistent with the restrictions. McGuire was not available at the time of the inquiry.

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[1] LEDC only owned a small portion of property located in the southeast corner of the site at the time the Notice was filed.

4.0 Execution of Proprietary Institutional Controls

The original Notice of Consent Decree Imposing Limitations and Restrictions of Property in the Lawrence County Recorders office on March 24, 1999 was signed by David Hausrath, Vice President and General Counsel of the Ashland, Inc., Bradley C. Hall, Chairman of the Management Committee at South Point Ethanol, and Carl A. Pecko, President of Ashland Ethanol, Inc. They were corporate officials of the three property owners at the time of execution.

5.0 Governmental Institutional Controls in Effect

Governmental ICs include federal, state, and/or local statutes, ordinances or other governmental instruments for restricting the use of resources at a property or group of properties. Shumaker, Loop, and Kendrick, LLC has conducted a search of local ordinances and statutes related to the South Point Superfund Site. At this time, none exist.

6.0 Evaluation of the Extent of Institutional Controls

The ICs in the Notice of Consent Decree Imposing Limitations and Restrictions of Property covers the entire areas of 13 parcels at the site. Maps have been produced showing the areas of the South Point Superfund Site covered by the one deed restriction and the six restrictive covenants in effect (Figures 6-1 and 6-2). The actual deed restriction, restrictive covenants, and maps are presented and discussed in the following sections.

The development of the ICs was based on information collected and evaluated during the RI/FS process. The Notice was recorded prior to performance of the remedial activities at the site in 2001. At the conclusion of the RI/FS, the location and dimensions of the Eastern Disposal Area Landfill and the extend of other remedial activities had not been fully determined. Thus, the ICs were recorded to broadly cover the entire site.

Figure 2-2 shows the areas at which remedial activities were performed. Two of the areas, the Eastern Disposal Area Landfill and the Northern Fly Ash Ponds, are the only areas of the site considered unsuitable for future development. Areas that currently exceed the groundwater performance standards for ammonia, manganese, and nitrate are also shown.

6.1 Deed Restriction 1

Figure 6-1 shows that the one deed restriction in the March 24, 1999 Notice of Consent Decree covers the entire property, based on the requirement that no one shall use surface or ground water from the site, including but not limited to human or animal consumption. The second component of the deed restriction applies to the Eastern Disposal Area Landfill and the Northern Fly Ash Ponds. This requires that no building, structure or other object be built or placed at the site to disturb the cap over the landfills (i.e., the Eastern Disposal Area Landfill) or other component of the remedy (i.e., the surface controls at the Northern Fly Ash Ponds).

6.2 Restrictive Covenant 1

Restrictive Covenant 1 requires that the owner and/or occupant will not allow activities related to wells for potable water to be performed at, on, or within the property. Figure 6-1 shows that Restrictive Covenant 1 covers the entire property.

6.3 Restrictive Covenant 2

Restrictive Covenant 2 requires that the owner and/or occupant will not engage in or allow activities that will disturb in any way the protective cover or other components of the remedy. Figure 6-2 shows that Restrictive Covenant 2 covers small areas of the property, including the cap on the Eastern Disposal Area Landfill and the Northern Fly Ash Ponds.

6.4 Restrictive Covenant 3

Restrictive Covenant 3 requires that the owner and/or occupant will not engage in or allow any activities related to surface water at, on, or within the property. Figure 6-1 shows that Restrictive Covenant 3 covers the entire property.

6.5 Restrictive Covenant 4

Restrictive Covenant 4 requires that the owner and/or occupant ensure that any legal instrument conveying an interest in the property contain and be subject to the deed restriction and restrictive covenants of the March 24, 1999 Notice of Consent Decree. Figure 6-1 shows that Restrictive Covenant 4 covers the entire property.

6.6 Restrictive Covenant 5

Restrictive Covenant 5 requires that the owner and/or occupant take reasonable actions within their property rights to ensure that no activities related to wells for potable water at, on, or within the property are performed. Figure 6-1 shows that Restrictive Covenant 5 covers the entire property.

6.7 Restrictive Covenant 6

Restrictive Covenant 6 requires that an owner and/or occupant limit its use of the property to commercial/industrial uses only. Figure 6-1 shows that Restrictive Covenant 6 covers the entire property.

7.0 Assessment of Objectives, Restrictions, and Performance Standards

The objective of ICs, in general, is to protect human health and the environment by eliminating exposure to contaminants that remain in place at the site. At the South Point Superfund Site, this objective is implemented by the deed restriction and restrictive covenants of the March 24, 1999 Notice of Consent Decree (Appendix A). The restrictions are summarized as follows:

- No building or construction can be performed on the site that will disturb the cap over the landfills or disturb any component of the remedy at the site.
- The owner and/or occupant cannot conduct or allow any activities related to wells for potable water at, on or within the property.
- The owner and/or operator will not conduct or allow any activities that would effect the cap or any other component of the remedy.
- The owner and/or occupant will not conduct or allow any activities that would result in the use of surface water at, on or with the property.
- All legal instruments conveying interest in the property will contain and be subject to the restrictions of the Notice of Consent Decree.

- The owner and/or occupant will take all measures within their property rights to ensure that activities related to wells for potable water are not conducted at, on or within the site.

- The owner and/or occupant will use the property for commercial/industrial uses only.

These seven restrictions are adequate for meeting the objective stated above. However, the performance standards of the ROD are not explicitly presented in the March 24, 1999 IC, making the groundwater restriction indefinite.

8.0 Monitoring and Compliance of Institutional Controls

Operation and maintenance (O&M) activities for the remedial work performed at the South Point Superfund Site are governed by the February 2002 *Operation and Maintenance Plan, South Point Superfund Site, Lawrence County, Ohio*, prepared by Parsons and issued by Honeywell. Per the O&M Plan, the cap over the Eastern Disposal Area Landfill is inspected on a quarterly basis. The surface controls at the Northern Fly Ash Ponds are inspected on an annual basis. Groundwater monitoring wells are inspected on a semi-annual basis when sampling of the wells occurs. Finally, the pumping wells of the groundwater containment system are inspected weekly, with telemetry being in place to indicate when a problem with the wells occurs. Each inspection requires a review of the ICs, which is discussed in the O&M reports. These reports are forwarded to USEPA and Ohio EPA on a quarterly basis. Based on inspections performed over the last three years, the site is being used in a manner consistent with the restrictions of the March 24, 1999 Notice of Consent Decree, with the exception of the installation of a gravel parking area over a portion of the Northern Fly Ash Ponds.

Based on the provisions of the Consent Order, modifications to a restriction would require the involvement of USEPA and potentially Ohio EPA. However, there appear to be no specific mechanisms in place that could be used to ensure their involvement.

9.0 Effectiveness of Institutional Controls

The existing proprietary ICs have been effectively implemented by the recording of the ICs (i.e. the March 24, 1999 Notice of Consent Decree) with property transactions at the South Point Superfund Site, which have occurred subsequent to the remedial action. They are currently preventing exposure of the public to contaminants at the site. The site is now

owned by the LEDC, Biomass Group, McGuire, and Meyer. All of these entities have or are acting upon plans to utilize their specific portions of the property for commercial/industrial purposes, avoiding the use of surface and ground water and avoiding damage to the Landfill cap and other components of the remedy. The ICs of the March 24, 1999 Notice of Consent Decree do run with the property and are to be referenced in future deeds as sales/leases occur.

USEPA's February 15, 2006 letter states that the State of Ohio has revised its code to create a version of the Uniform Environmental Covenants Act (UECA). The aim of the UECA is make ICs more effective by implementing proprietary institutional controls in the chain of title of an environmental response project. The current covenants are sufficient as they are applied. Consequently, no UECA is necessary to replace the existing covenants. However, as discussed in Section 10.0, additional or enhanced ICs may be necessary in the future. A UECA may be appropriate in these circumstances and should be reviewed in detail at that time.

10.0 Recommendations for Enhancing Existing Institutional Controls

As mentioned above, the existing ICs at the South Point Superfund Site were recorded prior to performance of the remedial activities at the site in 2001. At that time, the exact dimensions and location of the cap over the Eastern Disposal Area and the surface controls of the Northern Fly Ash Ponds were not known. Enhancement of the existing ICs can be performed by recording of the exact locations of these areas in the deeds for the properties on which they appear. The Eastern Disposal Area Landfill and the Northern Fly Ash Ponds are located on two parcels owned by Biomass Group, and on portions of Tract 1 owned by LEDC. It is recommended that these deeds be changed to more specifically show the location of the Eastern Disposal Area and the Northern Fly Ash Ponds.

The existing ICs for groundwater use do not reflect the existence of performance standards for groundwater at the site. Performance standards were specified in the ROD. If and when groundwater meets these performance standards, the use of groundwater at the site may be permitted. The groundwater ICs should be changed to reflect this.

The existing monitoring requirements in the O&M Plan are adequate to ensure that the ICs are maintained in the short term and the long term. However, the plan does not contain an annual certification to USEPA that ICs are in place and remain effective nor are the O&M

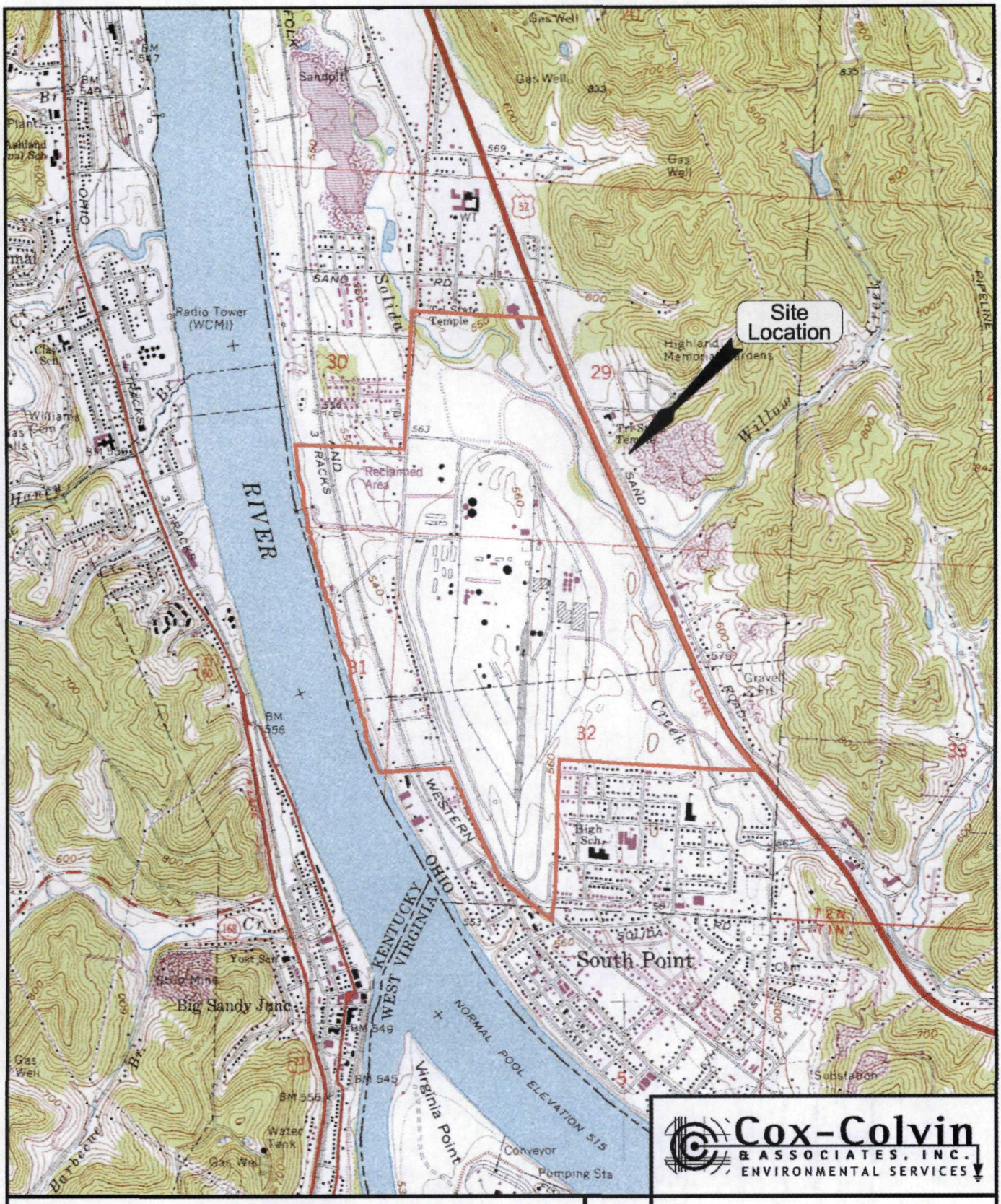
Reports provided to current landowners. It is recommended that an annual certification be added to the O&M Plan and that copies of the reports be provided to current landowners.

It is also recommended that the Notice of Consent Decree be specifically referenced in each deed instead of generally referenced as was the case for the McGuire and Meyer properties. The specific reference and inclusion of O&M Reports will enhance each landowners understanding of the restrictions associated with their properties.

Because the O&M Plan predates Ohio's UECA (found at Sections 5301.80-92 of the Ohio Revised Code), it does not contain any reference to its existence. If enhanced ICs are warranted in the future, the O&M Plan should be update to include this item.

K:\CCA\PROJECTS\Allied\SouthPoint\MACTEC Support\IC Study\IC Study Report.wpd

Figures



Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Source: 7.5 Minute Series Quadrangle
Catlettsburg, Kentucky - 1968
Photorevised 1985

Figure 2-1

Site Location Map,
South Point Plant Superfund Site,
South Point, Ohio

DRAFT

AREA SUMMARY

TRACT 1 533.205 ACRES

79.868 ACRES CONVEYED TO ASHLAND ETHANOL, INC.
0.868 ACRE CONVEYED TO SOUTH POINT ETHANOL
1.00 ACRE CONVEYED TO BOARD OF COUNTY COMMISSIONERS
9.49 ACRES CONVEYED TO RAY & RAYMOND BAILEY
2.96 ACRES CONVEYED TO LAWRENCE ECONOMIC DEV. CORP.
439.019 ACRES REMAINING

TRACT 2 35.953 ACRES

0.092 ACRE CONVEYED TO ASHLAND ETHANOL, INC.
11.410 ACRES CONVEYED TO S. PT. BOARD OF EDUCATION
24.451 ACRES REMAINING

TRACT 3 41.2± ACRES

GRANTEE

1. BIOMASS GROUP LLC.
2. BD. OF CO. COMM
3. RAY & RAYMOND BAILEY
4. S. PT. BOARD OF EDUC.
5. LAWRENCE ECONOMIC DEV. CORP.
6. KENNETH & CAROLYN MCGUIRE
7. MARTIN & CATHY MEYER

EASTERN DISPOSAL AREA LANDFILL CAP and FENCE
EASTERN DISPOSAL AREA NORTH (Revegetated Area)
DISPOSAL AREA D Soil & Waste Excavation
NORTHERN FLYASH PONDS Surface Controls
MID-PLANT AREA Soil Excavation
COKE-OVEN GAS BLOWDOWN AREAS Soil Excavation

16-070-0100.001
39-001-0300.002
15-145-1501
15-123-0202
15-123-0200.002
15-145-1502
15-145-1500.001
15-145-1500.002
15-145-1503
16-070-0102
16-070-0100 TRACT 1
15-123-0203
15-123-0204
15-123-0200.003 Lot 6
15-145-1504
Lot 4
Lot 7 16-070-0101
15-123-0200 TRACT 1
15-123-0200.001
39-001-0300.001
15-145-1500 TRACT 1
15-139-0600.001
15-145-1601
15-145-1600
TRACT 2
15-139-0600
TRACT 3
OHIO RIVER
VILLAGE OF SOUTH POINT CORPORATION LINE

Legend

- No disturbance of cap or surface controls permitted
- Areas remediated to industrial standards
- 16-070-0100 Tax parcel ID number
- Ammonia Plume - 30 mg/L
- Manganese Plume - 1.4 mg/L
- Nitrate Plume - 10 mg/L
- Plumes contoured from October 10, 2005 data.

DRAFT

N

Scale
0' 400' 800' 1600'

Areas Affected by Remedial Activities at the
South Point Plant Superfund Site,
South Point, Ohio

Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Figure
2-2

AREA SUMMARY

TRACT 1 533.205 ACRES

79.868 ACRES CONVEYED TO ASHLAND ETHANOL, INC.
0.868 ACRE CONVEYED TO SOUTH POINT ETHANOL
1.00 ACRE CONVEYED TO BOARD OF COUNTY COMMISSIONERS
9.49 ACRES CONVEYED TO RAY & RAYMOND BAILEY
2.96 ACRES CONVEYED TO LAWRENCE ECONOMIC DEV. CORP.
439.019 ACRES REMAINING

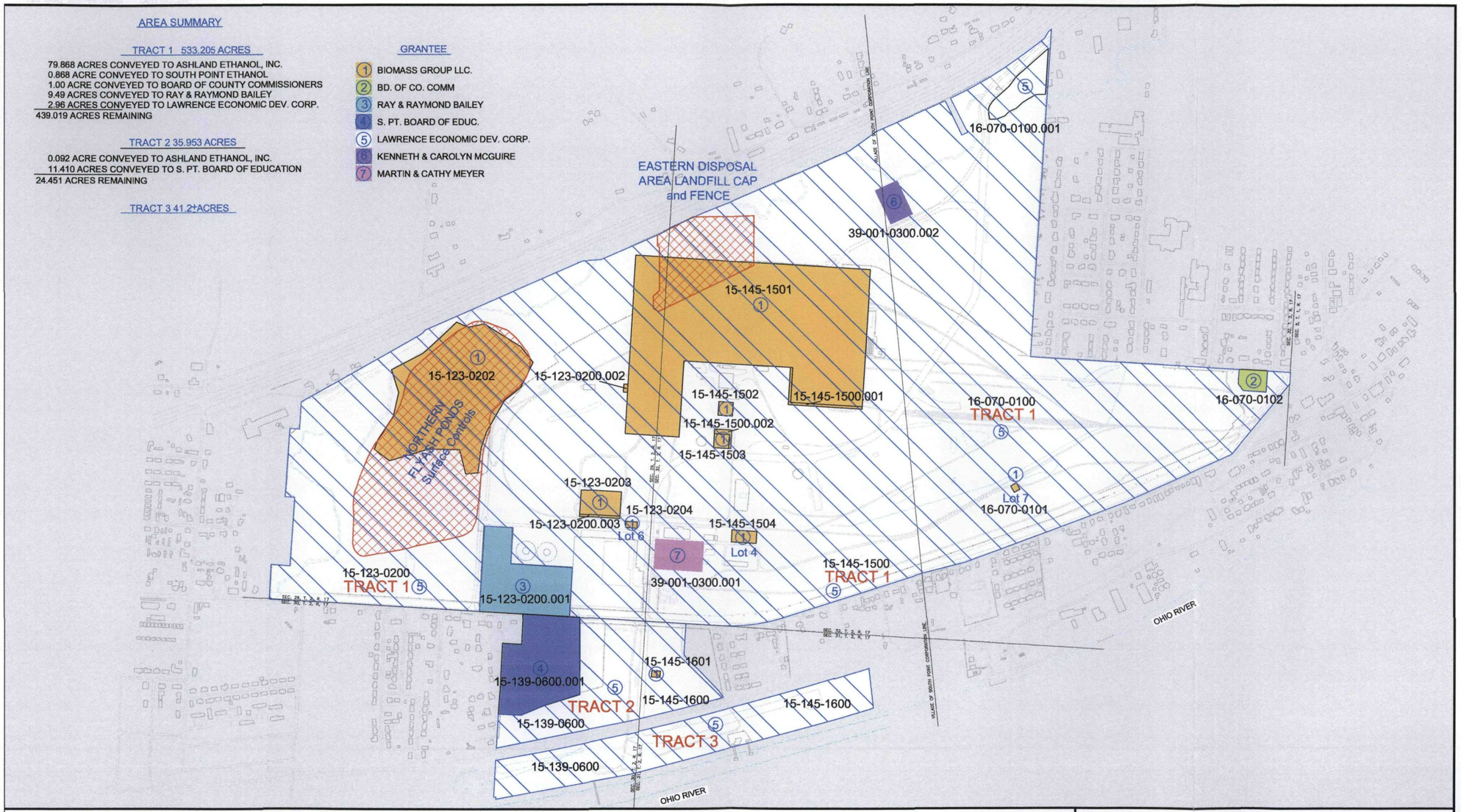
TRACT 2 35.953 ACRES

0.092 ACRE CONVEYED TO ASHLAND ETHANOL, INC.
11.410 ACRES CONVEYED TO S. PT. BOARD OF EDUCATION
24.451 ACRES REMAINING

TRACT 3 41.2±ACRES

GRANTEE

1. BIOMASS GROUP LLC.
2. BD. OF CO. COMM
3. RAY & RAYMOND BAILEY
4. S. PT. BOARD OF EDUC.
5. LAWRENCE ECONOMIC DEV. CORP.
6. KENNETH & CAROLYN MCGUIRE
7. MARTIN & CATHY MEYER



Legend

Area covered by Deed Restriction No. 1 of March 24, 1999 Notice of Consent Decree
No disturbance of cap or surface controls permitted

16-070-0100 Tax parcel ID number

DRAFT

Scale 0' 400' 800' 1600'

Area covered by Deed Restriction No. 1 and Restrictive Covenant Nos 1, 3, 4, 5, and 6 of March 24, 1999 Notice of Consent Decree,
South Point Plant Superfund Site,
South Point, Ohio

Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Figure 6-1

AREA SUMMARY

TRACT 1 533.205 ACRES

79.868 ACRES CONVEYED TO ASHLAND ETHANOL, INC.
0.868 ACRE CONVEYED TO SOUTH POINT ETHANOL
1.00 ACRE CONVEYED TO BOARD OF COUNTY COMMISSIONERS
9.49 ACRES CONVEYED TO RAY & RAYMOND BAILEY
2.96 ACRES CONVEYED TO LAWRENCE ECONOMIC DEV. CORP.
439.019 ACRES REMAINING

TRACT 2 35.953 ACRES

0.092 ACRE CONVEYED TO ASHLAND ETHANOL, INC.
11.410 ACRES CONVEYED TO S. PT. BOARD OF EDUCATION
24.451 ACRES REMAINING

TRACT 3 41.2±ACRES

GRANTEE

1. BIOMASS GROUP LLC.
2. BD. OF CO. COMM
3. RAY & RAYMOND BAILEY
4. S. PT. BOARD OF EDUC.
5. LAWRENCE ECONOMIC DEV. CORP.
6. KENNETH & CAROLYN MCGUIRE
7. MARTIN & CATHY MEYER

EASTERN DISPOSAL AREA LANDFILL CAP and FENCE

NORTHERN FLYASH PONDS Surface Controls

16-070-0100.001
39-001-0300.002
15-145-1501
15-123-0202
15-123-0200.002
15-145-1502
15-145-1500.001
15-145-1500.002
15-145-1503
16-070-0100
TRACT 1
16-070-0102
15-123-0203
15-123-0204
15-123-0200.003
Lot 6
15-145-1504
Lot 4
Lot 7
16-070-0101
15-123-0200
TRACT 1
39-001-0300.001
15-145-1500
TRACT 1
15-123-0200.001
OHIO RIVER
15-145-1601
15-139-0600.001
TRACT 2
15-145-1600
15-139-0600
15-145-1600
TRACT 3
15-139-0600
OHIO RIVER

VILLAGE OF SOUTH POINT CORPORATION LINE

Legend

Area covered by Restrictive Covenant No. 1 of March 24, 1999 Notice of Consent Decree
No disturbance of cap or surface controls permitted

16-070-0100 Tax parcel ID number

DRAFT

N

Scale
0' 400' 800' 1600'

Area covered by Restrictive Covenant No. 2 of March 24, 1999 Notice of Consent Decree,
South Point Plant Superfund Site,
South Point, Ohio

Cox-Colvin & ASSOCIATES, INC. ENVIRONMENTAL SERVICES

Figure
6-2

Appendix A

Notice of Consent Decree Imposing Limitations and Restrictions on Property, Lawrence County Recorder, Volume 0015 Pages 313 through 327

NOTICE OF CONSENT DECREE IMPOSING LIMITATIONS AND RESTRICTIONS ON PROPERTY

This Notice, dated as of March 24, 1999, is hereby given of that certain Consent Decree (the "Consent Decree") entered on November 19, 1998 by the United States District Court for the Southern District of Ohio in Civil Action No. 98 - 700 involving the United States of America (acting on behalf of the United States Environmental Protection Agency), AlliedSignal, Inc. (f/k/a Allied Chemical Corporation), Ashland Inc. (f/k/a Ashland Oil, Inc.), Ashland Ethanol, Inc. and South Point Ethanol. The Consent Decree imposes certain limitations and restrictions including, without limitation, those restrictions and limitations imposed by Appendix F of the Consent Decree (copy attached), on property located in Lawrence County, Ohio owned by Ashland Inc., Ashland Ethanol, Inc. and/or South Point Ethanol.

The restrictions and limitations of the Consent Decree, particularly Appendix F, are incorporated by Ashland Inc., Ashland Ethanol, Inc. and/or South Point Ethanol into that certain property, described on Exhibit A, which is attached hereto, that was conveyed by Allied Chemical Corporation to Ashland Oil, Inc. by deed dated May 21, 1979 and recorded in Volume 457, Page 689, of the deed records of the Recorder's Office of Lawrence County, Ohio, a portion of which property was conveyed as follows:

(1) by Ashland Oil, Inc. to Ashland Ethanol, Inc. by deed dated December 31, 1981 and recorded in Volume 476, Page 330, of the deed records of the Recorder's Office of Lawrence County, Ohio which was subsequently conveyed by Ashland Ethanol, Inc. to South Point Ethanol by deed dated December 31, 1981 and recorded in Volume 476, Page 360, of the deed records of the Recorder's Office of Lawrence County, Ohio; said property being more particularly described on Exhibit B which is attached hereto; and

(2) by Ashland Oil, Inc. to South Point Ethanol by deed dated June 14, 1984 and recorded in Volume 493, Page 615, in the deed records of the Recorder's Office of Lawrence County, Ohio; said property being more particularly described on Exhibit C which is attached hereto.

The Consent Decree does not affect or involve the following property that was a portion of the property originally conveyed by Allied Chemical Corporation to Ashland Oil, Inc.:

VOL 0015 PAGE 314

(1) that certain property conveyed by Ashland Oil, Inc. to the Board of County Commissioners of Lawrence County, Ohio by deed dated November 2, 1982 and recorded in Volume 480, Page 794 of the deed records of the Recorder's Office of Lawrence County, Ohio;

(2) that certain property conveyed by Ashland Oil, Inc. to Ray Curtis Bailey and Raymond Bailey by deed dated June 4, 1984 and recorded in Volume 493, Page 630, of the deed records of the Recorder's Office of the Lawrence County, Ohio;

(3) that certain property conveyed by Ashland Oil, Inc. to the South Point, Ohio Board of Education by deed dated October 10, 1984 and recorded in Volume 496, Page 477, of the deed records of the Recorder's Office of the Lawrence County, Ohio;

(4) that certain property conveyed by Ashland Inc. to the Lawrence County Economic Development Corporation by deed dated July 7, 1997 and recorded in Volume 624, Page 789, of the deed records of the Recorder's Office of the Lawrence County, Ohio.

In witness whereof, the parties have caused this Notice of Consent Decree to be executed by properly authorized representatives as of the day and year first above written.

ASHLAND INC.
(f/k/a Ashland Oil, Inc.)

JMP David L. Hausrath
David L. Hausrath
Vice President and General Counsel

ASHLAND ETHANOL, INC.

JMP Carl A. Pecko
Carl A. Pecko
President

SOUTH POINT ETHANOL

Bradley C. Hall
Bradley C. Hall
Chairman - - Management Committee

State of Kentucky)
) SS:
County of Kenton)

On this, the 24th day of March, 1999, before me, the undersigned officer, personally appeared David L. Hausrath, who acknowledged himself to be the Vice President and General Counsel of Ashland Inc., a Kentucky corporation, and that he, as such officer, being authorized so to do, executed the foregoing instrument for purposes therein contained, by signing the name of the corporation by himself as Vice President and General Counsel of Ashland Inc.

Mary Ellen Hardy
Notary Public

My Commission expires: July 14, 1999.

State of Kentucky)
) SS:
County of Kenton)

On this, the 24th day of March, 1999, before me, the undersigned officer, personally appeared Carl A. Pecko, who acknowledged himself to be the President of Ashland Ethanol, Inc., a Delaware corporation, and that he, as such officer, being authorized so to do, executed the foregoing instrument for purposes therein contained, by signing the name of the corporation by himself as President, of Ashland Ethanol, Inc.

Mary Ellen Hardy
Notary Public

My Commission expires: July 14, 1999.

State of Pennsylvania)
) SS:
County of Montgomery)

On this, the 8th day of April, 1999, before me, the undersigned officer, personally appeared Bradley C. Hall, who acknowledged himself to be the Chairman of the Management Committee of South Point Ethanol, an Ohio general partnership, and that he, as such officer, being authorized so to do, executed the foregoing instrument for purposes therein contained, by signing the name of the partnership by himself as Chairman of the Management Committee of South Point Ethanol.

Notary Public

My Commission expires: _____.

Notarial Seal
Lynn S. Quinn, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires Sept. 6, 1999
Member, Pennsylvania Association of Notaries

LYNN S. QUINN
COMMONWEALTH
OF
PENNSYLVANIA
NOTARY PUBLIC

LAWRENCE COUNTY, OHIO
PRESENTED FOR RECORD AT:
99 MAY 11 PM 1:20 003998
OR REC. 15 PAGE 313
SUE ANN DEEDS, RECORDER
66.00
8.00 MN
74.00

This Instrument Prepared By:

J. Michael Peffer, Esq.
50 E. RiverCenter Blvd.
Covington, KY 41012-0391

APPENDIX F: DEED RESTRICTIONS AND RESTRICTIVE COVENANTS

Ashland Inc., Ashland Ethanol, Inc., and South Point Ethanol, An Ohio General Partnership, agree to enact the following deed restrictions and restrictive covenants on its property (as described in the Consent Decree, Paragraphs 9A and 9B):

Deed Restrictions

1. No building, structure or other object shall be built or placed on the Site that would disturb the cap over the landfills or would otherwise disturb any component of the remedy at the Site. Further, no one shall use surface or ground water from the Site for any purpose, including but not limited to human or animal consumption.

Restrictive Covenants

1. The owner and/or occupant of the above-described premises covenants that he/she shall not engage in, cause or allow the drilling, construction, installation, development, operation or use of any well for potable water at, on or within said property;

2. The owner and/or occupant of the above-described premises covenants that he/she shall not engage in, cause or allow drilling, construction, installation, development, operation on or within said property that will damage, disturb, displace or destroy the protective cap or any other component of the remedy that has been placed on or within said property;

3. The owner and/or occupant of the above-described premises covenants that he/she shall not engage in, cause or allow the construction, installation, development, operation or use of the surface water at, on or within said property;

4. The owner and/or occupant of the above-described premises covenants that each deed, title, lease or other instrument conveying an interest in said property shall contain and be subject to the foregoing restrictions;

5. The owner and/or occupant of the above-described premises covenants that he/she shall take all reasonable and appropriate measures to the extent of her property rights to prevent or preclude the drilling, construction, installation, development, operation or use of any well for potable water at, on or within said property by any other person; and

6. The owner and/or occupant of the above-described premises covenants that he/she shall limits its use to commercial/industrial purposes only.

Said covenants shall run with the land, shall be binding

upon any and all successors in interest, and all assignees, lessees, sublessees, operators, tenants, licensees and agents, and any and all persons who acquire any interest in the property, and shall be for the benefit of Ashland Inc., Ashland Ethanol, Inc., and South Point Ethanol, An Ohio General Partnership, the United States Environmental Protection Agency ("EPA"), Protection Agency, and shall be privileged to enforce these covenants by appropriate action in a court of competent jurisdiction.

EXHIBIT A

Being three Tracts of land situated in Perry Township, Lawrence County, and partially in the Village of South Point, Ohio and being part of Sections 29 and 32 and Fractional Sections 30 and 31 of T-2, R-17 of the Ohio River Survey and being more particularly described as follows:

TRACT NO. 1

Beginning at a cut cross in the centerline of County Road No. 1, said cut cross marking the corner of Sections 29, 30, 31 and 32 of T-2, R-17 of the Ohio River Survey;

thence, with the centerline of County Road No. 1 and the west line of Section 29, N5° 37' 00" E passing a "P.K." nail at 1049.92 feet, in all 2764.63 feet to a "P.K." nail;

thence, leaving the aforesaid Section line and continuing with the said centerline, 256.67 feet, on a curve to the left having a radius of 11,459.16 feet the chord of which bears N4° 58' 30" E. 256.66 feet, to a "P.K." nail;

thence with the aforesaid centerline, N4° 20' 00" E 218.24 feet to a railroad spike;

thence, leaving said centerline and with the line of James King Vol. 236, Pg. 273, S84° 55' 20" E, passing a concrete monument at 80.01 feet, in all 306.08 feet to a concrete monument on the west line of Lot No. 24 of the Ohio Valley Truck Farms, Plat Book 2, Page 214;

thence S5° 43' 13" W 162.65 feet to a concrete monument at the southwest corner of Lot No. 25;

thence S84° 05' 04" E 598.89 feet to a concrete monument at the southeast corner of Lot No. 37;

thence N5° 43' 40" E 80.75 feet to a concrete monument at the corner of Lots 36, 37, 48 and 49;

thence S84° 05' 14" E 599.58 feet to a concrete monument at the corner of Lots 60, 61, 72 and 73;

thence S5° 47' 33" W 83.19 feet to a concrete monument at the southwest corner of Lot No. 73;

thence S84° 39' 26" E 237.77 feet to a concrete monument on the south line of Lot No. 73;

Attn: Lori

thence, leaving the line of the Ohio Valley Truck Farm, S27° 43' 37" E 67.98 feet to an iron pin in the west right of way line of County Road 60;

thence S27° 43' 37" E 114.01 feet to a point on the east right of way line of County Road 60;

thence, with said right of way, S27° 43' 37" E 983.78 feet to a concrete monument;

thence 68.46 feet, on a curve to the left having a radius of 165.99 feet the chord of which bears S39° 32' 37" E 67.98 feet, to an iron pin;

thence N38° 38' 23" E 2.14 feet to a concrete monument 120 feet right of centerline Station 967 + 08.85 of U. S. Route 52;

thence, with the west right of way line of U.S. Route 52, S21° 49' 21" E, passing an iron pin on the west right of way line of County Road 60 at 123.40 feet, 161.49 feet in all to a concrete fence post 119.99 feet right of centerline Station 968 + 70.34;

thence S21° 49' 14" E 1329.66 feet to a concrete fence post 120 feet right of centerline Station 982 + 00;

thence S1° 31' 00" E 158.50 feet to a concrete monument 175 feet right of centerline Station 983 + 48.65;

thence S21° 49' 15" E 560.15 feet to a point 175 feet right of centerline Station 989 + 08.80;

thence S29° 11' 13" E 117.00 feet to an iron post 160 feet right of centerline Station 990 + 24.83;

thence S21° 49' 15" E 275.17 feet to a concrete monument 160 feet right of centerline Station 993 + 00;

thence S20° 52' 34" E 909.61 feet to an iron post 175 feet right of centerline Station 1001 + 67;

thence S21° 49' 15" E 483.00 feet to a concrete monument 175 feet right of centerline Station 1006 + 50;

thence S33° 53' 39" E 286.73 feet to a concrete monument 115 feet right of centerline Station 1009 + 30.38;

thence S21° 49' 15" E 494.32 feet to a concrete monument 115 feet right of centerline Station 1014 + 24.70;

thence 136.34 feet, on a curve to the left having a radius of 5207.93 feet the chord of which bears S22° 34' 15" E 136.34 feet, to a concrete monument 115 feet right of Centerline Station 1015 + 58.03;

thence 17.48 feet, on a curve to the left having a radius of 3934.72 the chord of which bears S23° 26' 53" E 17.48 feet, to a concrete fence post 115 feet right of Centerline Station 1015 + 75;

thence S66° 25' 29" W 330.00 feet to an iron post 445 feet right of Centerline Station 1015 + 75;

thence S23° 57' 19" E 55.83 feet to an iron post 445 feet right of Centerline Station 1016 + 25;

thence N65° 40' 29" E 330.00 feet to an iron post 115 feet right of Centerline Station 1016 + 25;

thence 889.98 feet, on a curve to the left having a radius of 3934.70 feet the chord of which bears S30° 48' 18" E 888.08 feet, to a concrete fence post 115 feet right of Centerline Station 1024 + 88.96;

thence 72.65 feet, on a curve to the left having a radius of 5207.93 feet the chord of which bears S37° 41' 08" E 72.65 feet, to a concrete monument 115 feet right of Centerline Station 1025 + 60;

thence S58° 19' 05" E 67.59 feet to a concrete monument 92 feet right of Centerline Station 1026 + 22.29;

thence S38° 46' 45" E 32.02 feet to a concrete monument 92 feet right of Centerline Station 1026 + 54.31;

thence, leaving the west right of way line of U. S. Rte. 52 and with the end of a frontage road, N84° 23' 17" W 32.27 feet to an iron pin corner to M. B. Rucker, Vol. 225, Pg. 87;

thence, with the lines of Rucker, C. Whitley, Vol. 297, Pg. 77, the Tri-State Bible College, Vol. 408, Pg. 482, the Tri-State View Subdivision Plat Book 3, Page 120, John Renfro, Vol. 219, Pg. 86, and the Sunny Valley Subdivision Plat Bk. 5, Pg. 124, N84° 23' 15" W, passing a concrete monument at 1609.28 feet, in all 2830.31 feet to a concrete monument;

thence, continuing with the Sunny Valley Subdivision, S5° 30' 29" W 1243.46 feet to a concrete monument;

thence, with the line of the South Point Christian Church, Vol. 305, Page 90, S5° 31' 40" W 299.86 feet to a concrete monument;

thence S5° 29' 30" W 699.63 feet to a concrete monument on the South line of Section 32;

thence, with the south line of Section 32, N84° 29' 19" W 100.54 feet to a concrete monument on the east right of way line of the Norfolk & Western Railroad;

thence, with said right of way, N48° 54' 39" W 791.85 feet to a "P.K." nail at the centerline of the former "Ohio River Road" from which a concrete monument bears N63° 03' 40" E 80.21 feet;

thence N22° 39' 51" W 1030.13 feet to a "P.K." nail on the centerline of said road from which a concrete monument bears N69° 14' 55" E 80.04 feet;

thence N18° 50' 49" W 1459.50 feet to a "P.K." nail on the centerline of said road from which a concrete monument bears N77° 19' 15" E 80.19 feet;

thence N12° 27' 47" W 382.00 feet to a "P.K." nail on the centerline of County Road No. 1 from which a concrete monument bears N75° 49' 29" E 80.04 feet;

thence N15° 53' 25" W 1267.10 feet to a "P.K." nail on the centerline of County Road No. 1 from which a concrete monument bears N74° 06' 35" E 80.00 feet;

thence 536.64 feet, on a curve to the right having a radius of 1429.61 feet the chord of which bears N5° 08' 14" W 533.49 feet, to a "P.K." nail from which a concrete monument bears S84° 23' 00" E 80.00 feet;

thence N5° 37' 00" E, passing a "P.K." nail at 302.00 feet, in all 651.88 feet to the cut across point of beginning containing 533.205 acres and having all bearings based on the magnetic meridian of 1941.

TRACT NO. 2

Beginning at a cut cross in the centerline of County Road No. 1, said cut cross marking the corner of Sections 29, 30, 31 and 32, T-2, R-17 of the Ohio River Survey:

thence, with the centerline of County Road No. 1 and the east line of Section No. 31, S5° 37' 00" W 349.88 feet to a "P.K." nail in the centerline of County Road No. 1;

thence, leaving the centerline of County Road No. 1 and with the line of Margaret and James Ferguson, Vol. 166, Pg. 98, the following courses and distances, N84° 23' 29" W, passing as a witness a concrete monument at 50.00 feet, 270.90 feet to a concrete monument, S54° 01' 19" W 68.22 feet to an iron pin (reset), S45° 04' 04" W 113.70 feet to a stone, S48° 53' 49" W 258.45 feet to an iron pipe, S58° 12' 42" W 67.19 feet to an iron pin on the east right of way line of the Norfolk & Western Railroad;

thence, leaving the line of Ferguson and with the east right of way line of the Norfolk & Western Railroad 2002.81 feet on a curve to the right having a radius of 21,544.9 feet the following chords, N12° 07' 17" W 748.06 feet to a point on the south line of Section 30 from which a monument bears N84° 20' W 1.21 feet, N10° 59' 38" W 100.63 feet to a point, N9° 19' 30" W 1153.94 feet to a concrete monument (former car axle) corner to Andrew J. Dolin, Vol. 372, Pg. 289;

thence, leaving said right of way line and with the lines of Andrew J. Dolin, Kenneth McFann et al Vol. 312, Pg. 394, Gladys Dills, Vol. 398, Pg. 92 and Vol. 343, Pg. 381 and Robert B. and Anna J. Holbrook, Vol. 301, Page 54 and Vol. 207, Pg. 546, S84° 44' 48" E passing a stone at 534.32 feet and 880.56 feet, in all 918.54 feet to a stone corner to Wm. B. Scherer, Vol. 402, Pg. 403;

thence, with the lines of Scherer, S5° 36' 49" W 169.62 feet to a stone, S84° 43' 50" W passing a stone at 230.36 feet, in all 260.36 feet to a "P.K." nail on the centerline of County Road No. 1;

thence, with the said centerline (also being the east line of Section 30), S5° 37' 00" W 1049.92 feet to the cut across point of beginning containing 35.953 acres and having all bearings based on the magnetic meridian of 1941.

TRACT NO. 3

Beginning at a stone, on the west right of way line of the Norfolk & Western Railroad, which bears N84° 44' 48" W 107.78 feet from the concrete monument marking the Northwest corner of Tract No. 2 herein, said stone being the common corner of Ashland Oil & Refining Company, Vol. 206, Pg. 74;

thence, with the west right of way line of the Norfolk & Western Railroad, 1152.98 feet on a curve to the left having a radius of 21,649.9 feet the chord of which bears S9° 15' 07" E 1152.84 feet to an Iron pin;

thence N84° 22' 39" W 5.22 feet to an iron pin;

thence 100.52 feet, on a curve to the left having a radius of 21,654.9 feet the chord of which bears S10° 54' 27" E 100.52 feet to an iron pin on the south line of Section 30;

thence S84° 20' 37" E 5.22 feet to an iron pin;

thence 1424.75 feet, on a curve to the left having a radius of 21,649.9 feet the following chords S12° 06' 39" E 806.47 feet to a point, S13° 59' 44" E 618.15 feet to an iron post from which a concrete monument bears N14° 49' W 1.43 feet, said iron post being 65 feet left of Valuation Station 121 + 74.5 and marking the point of curvature of the aforesaid right of way;

thence, continuing with said right of way, S14° 48' 50" E 326.55 feet to an iron post from which a concrete monument bears S86° 08' E 2.68 feet;

thence S85° 42' 50" W 5.09 feet to an iron post from which a concrete monument bears S88° 52' E 2.55 feet;

thence S14° 48' 50" E 310.71 feet to an iron post from which a concrete monument bears S89° 48' E 3.05 feet and another monument bears N17° 59' W 8.81 feet;

thence leaving the N & W right of way line S85° 42' 50" W 347.13 feet to a concrete monument on the top of the high bank of the Ohio River;

thence, down river and with the high bank the following courses and distances, N14° 50' 06" W 310.73 feet to an iron pin, N13° 38' 00" W 772.39 feet to a concrete monument, N12° 43' 45" W 1041.02 feet to a concrete monument, N10° 24' 49" W 100.04 feet to a stone, N8° 25' 40" W 1146.28 feet to a stone on the line of Ashland Oil & Refining Company, Vol. 206, Pg. 74.

thence, with said line S84° 44' 48" E 343.76 feet to the stone point of beginning containing 25.965 acres and having all bearings based on the magnetic meridian of 1941, there is also included those lands between the high bank and the mean low water of the Ohio River being an addition 15.2 acres for a total of 41.2 acres more or less;

there is excluded herein a tract of land RESERVED by Ashland Oil & Refining Company in Vol. 206, Pg. 183 and being more particularly described as follows:

beginning at a stone on the North line of Tract No. 3 which bears N84° 44' 48" W 343.76 feet from the herein described point of beginning;

thence, with said north line, S84° 44' 48" E 20.00 feet to an iron pin;

thence S8° 25' 40" E 20.00 feet to an iron pin;

thence N84° 44' 48" W 20.00 feet to an iron pin;

thence N8° 25' 40" W 20.00 feet to the stone point of beginning containing 0.009 acres.

The Solvay Process Company was merged into Allied Chemical & Dye Corporation on October 28, 1947, a copy of which certificate of merger was filed with the Secretary of State of Ohio. Allied Chemical & Dye Corporation thereafter, on April 28, 1958, by certificate filed with the Secretary of State of Ohio changed its named to Allied Chemical Corporation.

The total acreage for all three of the above described tracts being 610.3 acres more or less. A survey of this property was made on January 9, 1979 and revised on March 1, 1979 and April 19, 1979 by Lawrence R. Wells, Registered Professional Surveyor, Registration No. 6471.

The above-described three tracts are composed of the following Lawrence County, Ohio tax parcel numbers:

15-123-0200
15-139-0600
15-145-1500
15-145-1600
16-070-0100

EXHIBIT B

Nine (9) tracts or parcels of property in Perry Township and the Village of South Point in Lawrence County, Ohio, said tracts or parcels being more particularly described and shown as lots numbered 2 through 10 (herein called the "Lots"), on the plat of the survey, prepared by Laurence R. Wells, Professional Surveyor No. 6471, which is recorded in Plat Book 9 at page 101.

The Lots are composed of the following Lawrence County, Ohio tax parcel numbers:

15-123-0201
15-123-0202
15-123-0203
15-123-0204
15-145-1501
15-145-1502
15-145-1503
15-145-1504
15-145-1601
16-070-0101

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EXHIBIT C

Four parcels of land in Perry Township, Lawrence County, Ohio:

Parcel I

Being part of Section 29, Township 2, Range 17, and being more particularly described as follows:

Commencing at the southwest corner of Section 29; thence, with the south line of Section 29, South 84° 19' 07" East 1,628.52 feet to a point on the west line of Lot No. 2 of those lands conveyed to South Point Ethanol by deed recorded in Volume 476 at Page 360; thence, with the west line of Lot No. 2, North 5° 37' 48" East 273.87 feet to a one-inch iron pipe; thence, with the north line of Lot No. 2, South 84° 22' 12" East 361.00 feet to a one-inch iron pipe being the true point of beginning of this description; thence North 5° 37' 48" East 36.56 feet to a 1" iron pipe; thence South 84° 22' 12" East 70.50 feet to a one-inch iron pipe; thence South 5° 37' 48" West 36.56 feet to a one-inch iron pipe on the north line of Lot No. 2; thence North 84° 22' 12" West 70.50 feet to the point of beginning, containing 0.059 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-123-0206

Parcel II

Being part of Section 29, Township 2, Range 17, and being more particularly described as follows:

Commencing at the southwest corner of Section 29; thence with the south line of Section 29, South 84° 19' 07" East 903.53 feet to a point; thence North 5° 37' 48" East 273.22 feet to a one-inch iron pipe, said iron pipe being the southwest corner of Lot No. 3 of those lands conveyed to South Point Ethanol of record in Volume 476 at Page 360 and also being the true point of beginning for this description; thence North 84° 22' 12" West 19.01 feet to a one-inch iron pipe; thence North 5° 37' 48" East 346.46 feet to a one-inch iron pipe; thence South 84° 22' 12" East 19.01 feet to a one-inch iron pipe at the northwest corner of Lot No. 3; thence, with the west line of Lot No. 3, South 5° 37' 48" West 346.46 feet to the point of beginning, CONTAINING 0.151 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-123-0207.

EXHIBIT C

Parcel III

Being part of Section 32, Township 2, Range 17, and being more particularly described as follows:

Commencing at the northwest corner of Section 32; thence with the north line of Section 32, South 84° 19' 07" East 1,989.52 feet to a point; thence South 5° 37' 48" West 1,749.25 feet to a one-inch iron pipe, said iron pipe being the southwest corner of Lot No. 2 of those lands conveyed to South Point Ethanol of record in Volume 476 at Page 360 and also being the true point of beginning of this description; thence North 84° 22' 12" West 20.00 feet to a one-inch iron pipe; thence North 5° 37' 48" East 635.00 feet to a one-inch iron pipe on the line of Lot No. 2; thence, with the line of Lot No. 2, South 5° 37' 48" West 20.00 feet to a one-inch iron pipe; thence, continuing with the line of Lot No. 2, North 84° 22' 12" West 305.00 feet to a one-inch iron pipe; thence, continuing with the line of Lot No. 2, South 5° 37' 48" West 615.00 feet to the point of beginning, CONTAINING 0.432 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-145-1505.

Parcel IV

Being part of Section 32, Township 2, Range 17, and being more particularly described as follows:

Commencing at the northwest corner of Section 32; thence, with the north line of Section 32, South 84° 19' 07" East 1,554.29 feet to a point; thence South 5° 37' 48" West 619.64 feet to a one-inch iron pipe, said iron pipe being the true point of beginning of this description and further being the southwest corner of Lot No. 9 of those lands conveyed to South Point Ethanol and recorded in Volume 476 at Page 360; thence, with the south line of Lot No. 9 South 84° 22' 12" East 118.66 feet to a point; thence, with the east line of Lot No. 9, North 5° 37' 48" East 123.83 feet to a one-inch iron pipe; thence, leaving the line of Lot No. 9, South 84° 22' 12" East 44.00 feet to a one-inch iron pipe; thence South 5° 37' 48" West 150.83 feet to a one-inch iron pipe; thence North 84° 22' 12" West 162.66 feet to a one-inch iron pipe; thence North 5° 37' 48" East 27.00 feet to the point of beginning, CONTAINING 0.226 acres as surveyed and described by Laurence R. Wells, Registered Land Surveyor No. 6471.

The above-described parcel of land is currently listed as Auditor's Duplicate No. 15-145-1506.

Appendix B

Notice of Ownership History of South Point Superfund Site

Cox-Colvin & Associates, Inc.

Appendix B
Notice of Ownership History of South Point Superfund Site

The property transferred from Allied Chemical to Ashland Oil by Deed Vol.457, p.689 (5/30/79) contained 610.3 acres of land. In 1981, Ashland Oil had a survey drawing prepared that created twelve (12) "lots" known as 1A, 1B, 1C, and 2 through 10. A survey drawing of the lot layout was recorded in 1981 and then corrected by an Affidavit of Surveyor recorded in 1998. Lots 2 through 10 were then transferred to Ashland Ethanol by Deed Vol.476, p.330. Ashland Ethanol immediately transferred Lots 2 through 10 to South Point Ethanol. At the time of the transfer, Ashland Oil and South Point Ethanol entered into an agreement regarding the use of railroads, roadways, and water systems.

- In 1982, Ashland Oil conveyed a one-acre tract from Lot 1A to the Board of County Commissioners of Lawrence County by Deed Vol.480, p.794.
- In 1984, Ashland Oil conveyed a 9.49 acre tract from Lot 1A to Ray Curtis Bailey and Raymond Bailey by Deed Vol. 493, p. 530.
- Also in 1984, Ashland Oil transferred four small tracts of land to South Point Ethanol by Deed Vol. 493, p. 615. These small tracts of land were immediately adjacent to Lots 2, 3, and 9 already owned by South Point Ethanol.
- Also in 1984, Ashland Oil conveyed an 11.41 acre tract from Lot 1B to the South Point Board of Education by Deed Vol. 496, p. 477.
- In 1997, Ashland Oil conveyed a 2.96 acre tract from Lot 1A to Lawrence Economic Development Corporation ("LEDC") by Deed Vol. 624, p. 789. LEDC subsequently split 1.4 acres of the 2.96 acres to a new parcel by Deed Vol. 629, p. 222.
- In 1999, South Point Ethanol conveyed all tracts owned (either acquired from Ashland Ethanol or Ashland Oil) to Biomass Group. Deed stated that the conveyance is subject to restrictions, easements, leases, agreements, joint use agreement, settlement agreements, consent decrees, and declaration of servitude previously recorded.
- In 2001, Ashland, Inc. (f/k/a Ashland Oil) conveyed all property that it still owned that had been acquired from Allied Chemical to LEDC by Deed OR Vol. 86, p. 69. Deed stated that the conveyance is subject to consent decree, notice of consent decree, settlement agreement, declaration of servitude, joint use agreement, and all other encumbrances affecting the property whether recorded or not. Deed further contains acknowledgement of Grantee that property was used for manufacture of chemicals and specific restrictions on use of the property.
- In 2002, LEDC recorded a Declaration of Covenants, Conditions, Restrictions & Easements for all tracts acquired from Ashland as well as other adjacent parcels.

- Also in 2002, LEDC conveyed a 2.5 acre tract to Martin and Cathy Meyer by Deed OR Vol. 179, p. 736. The deed stated that the property was sold "as is" and that grantee could not make any claim against grantor due to diminution of value, loss of use, remediation of contamination or any other defect. The deed further stated that the property was subject to all exceptions contained in prior documents in chain of title.
- In 2006, LEDC conveyed a 1.5 acre tract to Kenneth R. and Carolyn Sue McGuire. The deed stated that the property is subject to all restrictions, reservations, covenants, exceptions, etc., previously imposed and appearing of record and those not of record.
- Currently, of the 610.3 acres conveyed from Allied Chemicals to Ashland Oil, there are approximately eighteen (18) tracts of land owned by seven (7) different owners. (Note, the eighteen (18) tracts do not necessarily correspond to only eighteen (18) tax parcels – there may be additional tax parcels.) Following is a summary of the ownership:

1) Biomass Group - Lots 2 through 10 (8 tracts)
2) Board of Lawrence County Commissioners – 1 acre tract
3) Ray Curtis Bailey and Raymond Bailey – 9.49 acre tract
4) South Point Board of Education – 11.41 acre tract
5) LEDC – 1.4 acre tract (from 2.96 acre tract)
6) LEDC – 1.56 acre tract (from 2.96 acre tract)
7) Martin and Cathy Meyer – 2.5 acre tract
8) Kenneth and Carolyn Sue McGuire – 1.5 acre tract
9) LEDC – remainder (3 tracts)

Superfund Division
U.S. Environmental Protection Agency

Five-Year Review
Groundwater Performance Evaluation

South Point Plant

Lawrence County
South Point, Ohio

EPA ID# OHD071650592

Prepared by,

Groundwater Evaluation and Optimization System
Advanced Analysis & Decision Support Section
Superfund Division

April 24, 2006

GEOS
Groundwater Evaluation and Optimization System

South Point Plant, South Point Ohio

EPA ID#: OHD071650592

Site Description

The South Point Plant site, located in Lawrence County, Ohio, is a 610 acre industrial area where numerous potentially responsible parties (PRPs), including Allied-Signal, Ashland Oil, and South Point Ethanol (SPE), produced ammonia fertilizer and formaldehyde and operated a coal-water fuel pilot plant, a pitch prilling test plant, and an ethanol production plant. The site contains three unlined landfills that contain a variety of wastes including fly ash, plant refuse, coal cinder, and small quantities of chemicals. In addition, numerous activities have contributed to the contamination of groundwater and soils, including a number of major spills at the site. The site is located on the eastern flood plain of the Ohio River. Approximately 65,000 people live within three miles of the site. The village of South Point is the nearest town. The intake for the Ashland, Kentucky municipal water supply, which serves approximately 24,000 people, is located on the Ohio River about one mile downstream of the site. The village of South Point draws its water supply from a well field, located near the site that supplies drinking water to an estimated 4,000 people. Figure 1 illustrates the Site Location Map.

1) Purposes

The Region 5 Groundwater Evaluation and Optimization System (GEOS) program was requested to review the South Point Superfund Site as a part of the Five Year Review, in terms of the groundwater remedy performance.

2) Remedy Performance Requirements

The remedy performance requirements for South Point Superfund Site involving groundwater were detailed in the Final Design (RD) Report by Parsons Inc, March 2001. In Section 3.6 Site Wide Containment it stated

"Site-wide groundwater containment is an integral part of the groundwater remedy presented in the ROD. The purposes of groundwater containment are to:

- Prevent further migration of the existing AMMONIA and NITRATE plumes within the central portion of the Plant; and
- Remediate the aquifer through the extraction of contaminated groundwater."

In order to achieve the groundwater containment and groundwater restoration stated in Section 3.6, the RD required that two existing production wells, SPIS-23, and SPIS-24 will each be pumped at rates of approximately 250 to 300 gpm."

3) Verification of Remedy Performance Requirements

In order to verify that the remedy performance requirements were being achieved, a groundwater monitoring plan was developed in section 12.3 of the RD. This section of the RD required;

"Groundwater flow and quality will be monitored semi-annually until it can be demonstrated that the remedial goals for groundwater have been met. The wells to be used for water levels and for the collection of groundwater samples are presented on Table 2-3 of the Preliminary Design Submittal dated October 1999 and on Figure 3-1. The list of analytes to be used in evaluating groundwater quality are those presented in the AOC (AMMONIA, ARSENIC, BERYLLIUM, CADMIUM, COPPER, MANGANESE, NICKEL, AND NITRATE). Annually, a report will be issued to the U.S. EPA that will present the results of the groundwater monitoring program (including an evaluation of the target capture zone, hydraulic gradients, contaminant concentration trends, volumes of pumped water, changes in head, and extracted contaminant mass), and a summary of NPDES discharge trends. Any changes to the monitoring program, including the cessation of monitoring, will be proposed in the annual reports. An electronic data deliverable (EDD) will be provided as an attachment to the annual report. The format will be consistent with the most up-to-date version of U.S. EPA's EDD Specification Manual."

Additional performance verification described section 12.3 of the RD required:

"The groundwater containment system will remain operational until it can be demonstrated that the groundwater plumes have been remediated. The key elements of the system are the production wells, SPIS-23 and SPIS-24. At the beginning of the RA, these wells will be rehabilitated. Then, during each monitoring period, the efficiency of the wells will be evaluated. When the efficiency of either well declines to the point that it may begin to compromise the containment, it will be rehabilitated or replaced. Well efficiency evaluations will be communicated to the U.S. EPA in the annual monitoring reports."

4) Inconsistencies with Performance Verification Requirements

a. Target Capture Zones

Although Target Capture Zones were developed for each annual report, the size of the zones are significantly smaller than the target zones determined by GEOS. A potential reason for the difference in size is a lack of monitoring wells near the plume boundary. Additional monitoring data may provide a basis for a smaller target zone than GEOS calculated.

b. Hydraulic Gradient/Hydraulic Containment Area

The area of hydraulic containment (capture zone) can only be determined by mapping the groundwater gradient directions and magnitudes. None of the annual monitoring reports determined the current area of hydraulic containment. It is unclear how a single value of gradient was calculated or is relevant in determining the performance of the groundwater containment system. In a groundwater pumping system with radial flow, the gradients will drastically change throughout the site. The inclusion of a capture zone map generated by a historical model sheds little light on the current area of capture. The historical model has different pumping conditions, different background gradient conditions, and different sets of groundwater level measurements.

The size of the G&M historical modeled capture zone is also in question due to significant structural problems in the flow model. As stated by G&M on page 15 of the modeling report, there is significant spatial bias in the errors of the model. Randomly distributed errors are one of the goals of a good model calibration.

The model has a bias toward, and therefore, incorrectly predicts, a larger capture zone than is warranted. This is evident in the fact that the model predicts lower groundwater elevations in the regions around

the two pumping wells SPIS-23 and SPIS-24, and along the edge of the river than it should. In the worst case, close to SPIS-24, the model predicted groundwater levels 3.1 feet lower than actual measurements. Since the range of water levels (in the area of concern) for the date of the calibration was only 7 feet (517-510 F), there was a 44% error in the predicted water elevation.

The lower elevations of groundwater will incorrectly predict stronger gradients and a capture zone that is too large. In addition, the model had a spatial bias on the up-gradient side of the site which predicted elevations that were too high. This will also lead to a capture zone that may be too large.

A thorough review of the past monitoring data and a capture zone analysis using the actual groundwater level measurements and the current rates of pumping is necessary.

c. Required Rates of Groundwater Pumping

The groundwater production well system has been under performing for a significant amount of time. Well SPIS-23 was pumping less than the required range (250-300 GPM) for sixteen of the last twenty four measurements reported. The rates of pumping have been as low as 50 GPM. During the same time periods that well SPIS-23 was pumping less than the required amount, well SPIS-24 was pumping at the lower required range at or just below 250 GPM. Pumping at 50 to 60% of the designed required rates of pumping will have a direct negative effect on the area of capture.

d. Well Efficiency Evaluation

A more thorough evaluation of well efficiency needs to be performed and reported. Well rehabilitation needs to occur prior to the time wells drop below the required rate of pumping.

5) Data Analysis

a. Statistical Analysis on Groundwater Chemistry Data

The South Point groundwater chemistry dataset was analyzed. The dataset included 12 rounds of semi-annual chemistry measurements from April 2000 to October 2005. Data was reported for the following eight contaminants: ARSENIC; BERYLLIUM; CADMIUM; COPPER; MANGANESE; NICKEL; NITROGEN, AMMONIA (AS N); and NITROGEN, NITRATE-NITRITE. Three statistical tests were run: 1) trend test (check for upward or downward trends over the entire date range of the dataset); 2) baseline test (comparison of the most recent data point to a baseline level calculated from the first eight available data points); and 3) standard test (comparison of the site specific standards to the upper confidence level constructed from the four most recent data points).

Results at well SPMW-09 are a cause for concern. Statistically significant increasing trends were detected for CADMIUM, COPPER, and NICKEL. This indicates that the concentrations of these contaminants has been increasing at SPMW-09 over time and could indicate inadequate functioning of the capture system. It should be noted that SPMW-09 is located north of the site in an area that is not indicated by Cox-Colvin to be within the historic groundwater model generated capture zone from wells SPIS-23 and SPIS-24.

Aside from the increases in several contaminant concentrations over time at SPMW-09, there were also statistical exceedances of the site standards at this location for: BERYLLIUM; CADMIUM; COPPER; MANGANESE; NITROGEN, AMMONIA (AS N); and NITROGEN, NITRATE-NITRITE. This indicates that SPMW-09 is within the target plume area for remediation.

Since SPMW-09 is clearly within the target plume, it should also be within the capture zone for the remediation system. In the capture zone estimate provided in the Cox-Colvin Annual Reports, this is not the case.

Other significant statistical results for the South Point groundwater chemistry data include:

- upward trend for NITROGEN, AMMONIA (AS N) at SPIS-24, SPMW-07;
- upward trend for NITROGEN, NITRATE-NITRITE at SPMW-05;
- exceedance for MANGANESE at SPMW-06, SPMW-10, and SPMW-11;
- exceedance for NITROGEN, AMMONIA (AS N) at SPIS-24, SPMW-06, and SPMW-07;
- exceedance for NITROGEN, NITRATE-NITRITE at SPIS-24, SPMW-02, SPMW-06, SPMW-07;
- worse than baseline for NITROGEN, AMMONIA (AS N) at SPIS-24; and
- worse than baseline for NITROGEN, NITRATE-NITRITE at SPMW-05.

There was one other statistically significant result: an exceedance for NITROGEN, NITRATE-NITRITE at well SPOB-12. This statistic was based on the 4 most recent measurements at SPOB-12. SPOB-12 was replaced by SPOB-12R, and SPOB-12R is currently in compliance for NITROGEN, NITRATE-NITRITE. This indicates that the area near SPOB-12 was previously above the standard, but more recently has been below the standard.

b. Estimated Target Zones

The Cox-Colvin Target Plumes for Ammonia, Manganese, and Nitrate were copied from the Plume Geometry (October 2003) drawing in the Annual Groundwater Monitoring Report (Year 2003), South Point Plant Superfund Site Remedial Action, South Point, Ohio. Cox-Colvin plumes were rotated and scaled to be in line with UTM NAD83 Zone 17 coordinates (See Figures 2 and 3).

For comparison, the GEOS team constructed Target Plumes for the same three contaminants using the South Point groundwater chemistry dataset. One exception is that the Cox-Colvin Plume Geometry shows a Nitrate plume, but the GEOS plume shows a Nitrate-Nitrite combination plume since those were the values contained in the dataset. The target plumes were estimated using kriging to interpolate the 2D maximum extent for each contaminant at the site-specific standard. The input for kriging was the Upper Confidence Limit (UCL) data for the 4 most recent samples (typically data from 4/2004 through 10/2005) (See Figures 4, 5, and 6). These figures have been superimposed into one composite image (See Figure 7). The outlines for the entire target zone is shown in Figure 8.

GEOS target plume estimates are much larger than the Cox-Colvin estimates. Much of the difference is due to the influence of the high concentrations reported at SPMW-09. SPMW-09 has a large affect on the plume estimate because there are no nearby chemistry measurement points (See Figure 9).

There are few wells in the vicinity of SPMW-09 that are measured for chemistry data which increases the uncertainty of the estimate in that area. If chemistry data could be collected from more wells in the unsampled zone, a more accurate target zone could be constructed. Candidate wells for gathering more chemistry data include the several wells near SPMW-09 that are measured for water levels (SPIS-15A, SPIS-15, SPIS-18, T2-B). There also appears to be a large area between SPMW-08, SPIS-26, SPMW-07, and SPOB-15R2 where no sampling is done. Additionally, there are no chemistry sampling points north of SPMW-09. More data to the north of SPMW-09 would be required in order to map the northern edge of the target plume.

c. Evaluation of Pumping Rates

Available historical pumping rates for extraction wells SPIS-23 and SPIS-24 were plotted over time. Data from April 2000 – December 2003 was obtained from the Cox-Colvin annual reports. The remedy performance requirements for South Point Superfund Site involving groundwater were detailed in the Final Design (RD) Report by Parsons Inc, March 2001. In Section 3.6 Site Wide Containment it stated, "In order to achieve the groundwater containment and groundwater restoration, the RD required two existing production wells, SPIS-23 and SPIS-24 will each be pumped at

rates of approximately 250 to 300 gpm."

Two graphs were prepared; one showing the rates for each of SPIS-23 and SPIS-24, and one showing the sum of the rates (See Figures 10 and 11).

The rate at SPIS-23 was decreasing over time (until the last available measurement), and was often below 250 gpm. It would also be advisable to obtain data from December 2003 to the present in order to assess the current status of pumping rates at the South Point Site.

6) Recommendations and Conclusions

a) Target Capture Zones

Evaluate and document the methods for determining the target capture zone. Additional monitoring data may provide a basis for a smaller target zone than GEOS calculated.

b) Hydraulic Gradient/ Hydraulic Containment Area
A thorough review of the past monitoring data needs to be performed. A valid and defensible capture zone analysis needs to be performed. This analysis must use the current groundwater level measurements and the current rates of pumping in determining the gradient field.

c) Required Rates of Groundwater Pumping

The groundwater production well system has been underperforming for a significant amount of time. Pumping at 50 to 60 % of the designed required rates of pumping will have a direct negative effect on the area of capture. The rates of pumping need to be increased and maintained.

d) Well Efficiency Evaluation

A more thorough evaluation of well efficiency needs to be performed. Well rehabilitation needs to occur prior to the time wells drop below the required rate of pumping.

e) Monitoring Well Network

Based on the reanalysis of the method for determining the Target Capture Zone and the Capture Zone Analysis, additional monitoring wells may be needed.

Figure 1

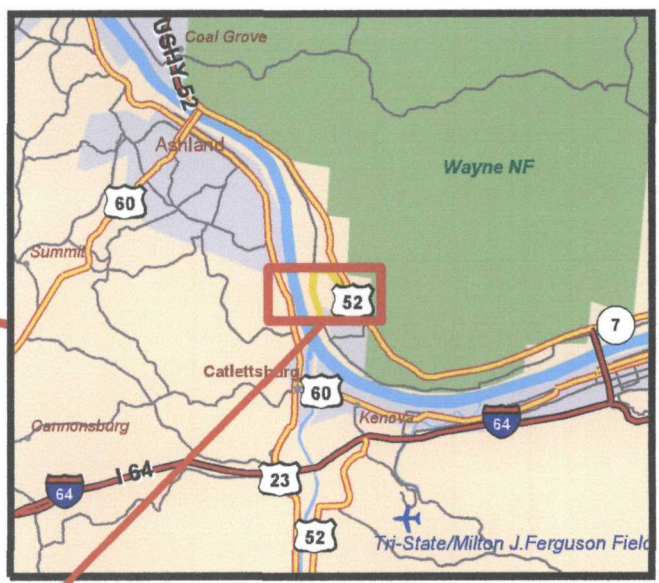
Five Year Review Map

Superfund
U.S. Environmental Protection Agency

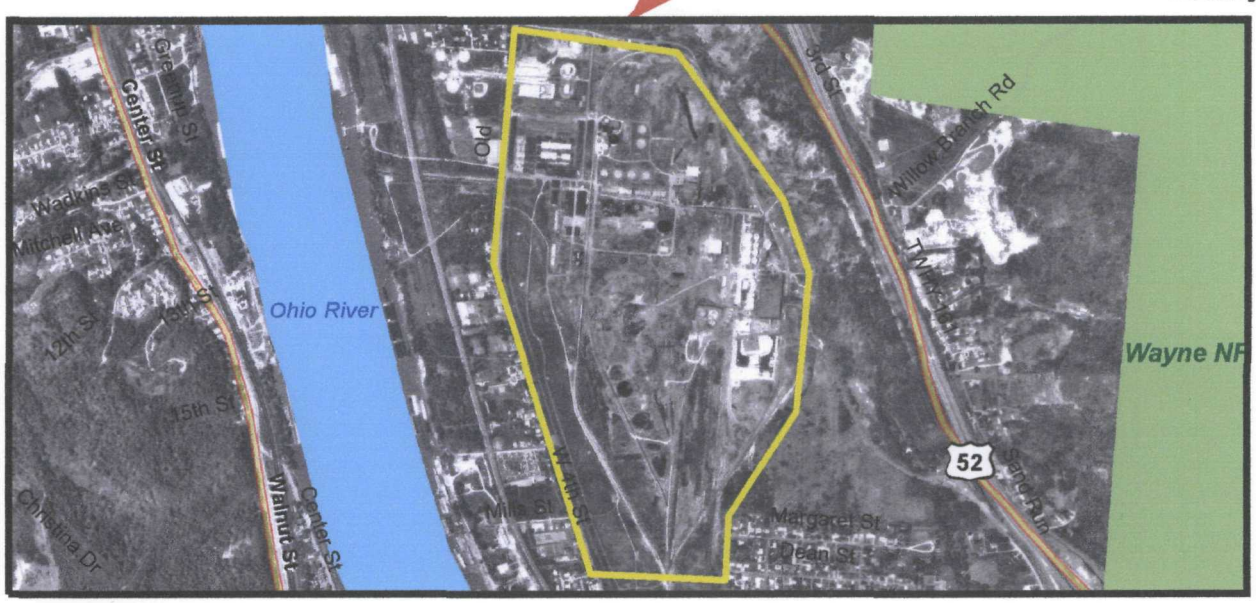
South Point
Lawrence County, OH

EPA ID# OHD071650592

State



County



2,000 1,000 0 2,000 Feet

Site

Legend

Site Outline

N
W E
S

Produced by Andrea Porter, US EPA Region 5 on 4/14/2006

GEOS
Groundwater Evaluation and Optimization System

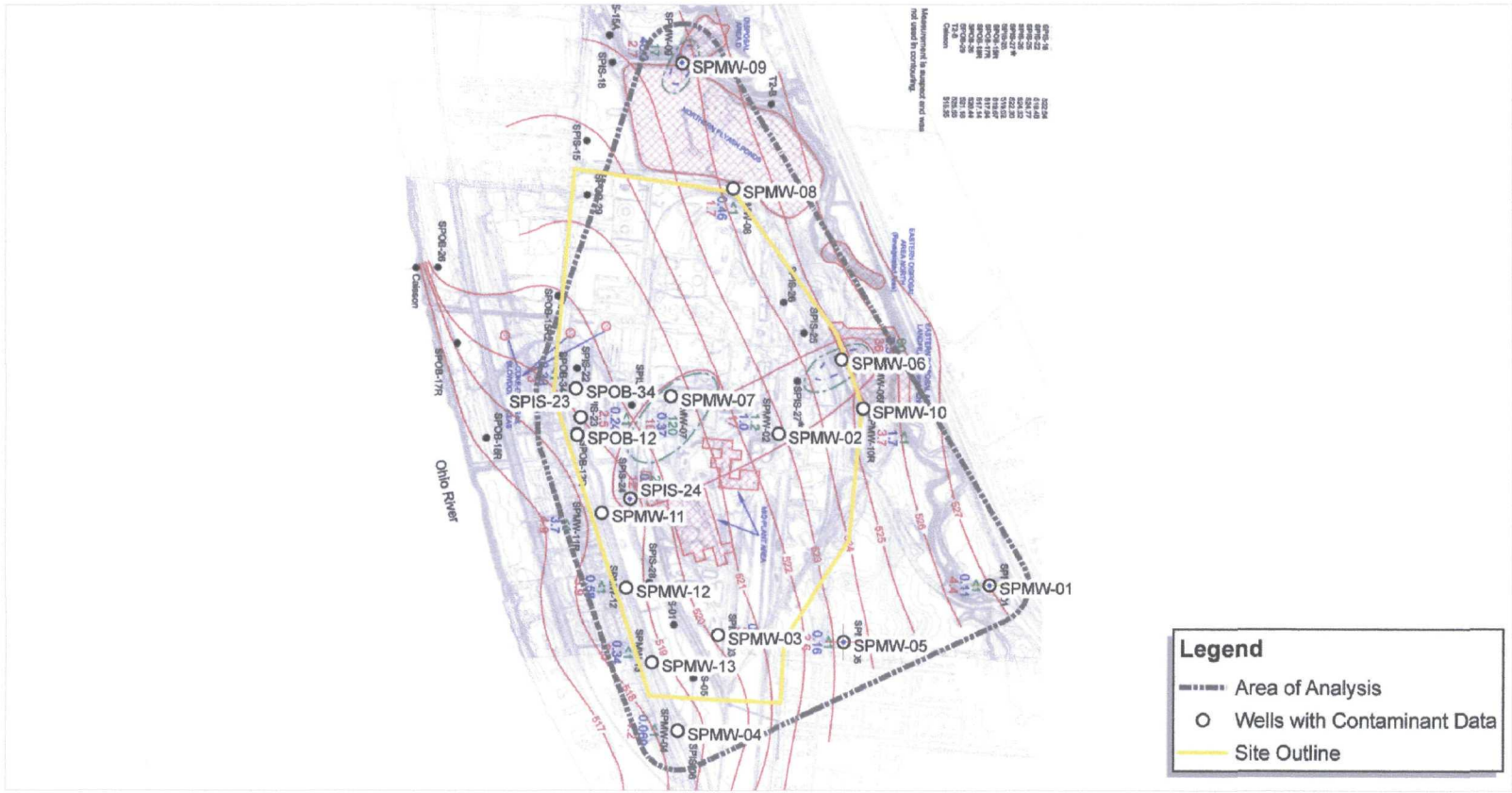
Cox-Colvin Target Zone

Groundwater Plume Geometry (October 2003):
Ammonia at 30,000 ug/l, Manganese at 1,400 ug/l, and Nitrate at 10,000 ug/l

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592



N

0 380 760 1,520 2,280 3,040 Feet

Figure 2

NOTES: Plume Geometry (October 2003) figure was copied from Annual Groundwater Monitoring Report (Year 2003), South Point Plant Superfund Site Remedial Action, South Point, Ohio Report. Figure was rotated and scaled to be in line with UTM NAD83 Zone 17 coordinates.

GEOS
Groundwater Evaluation and Optimization System

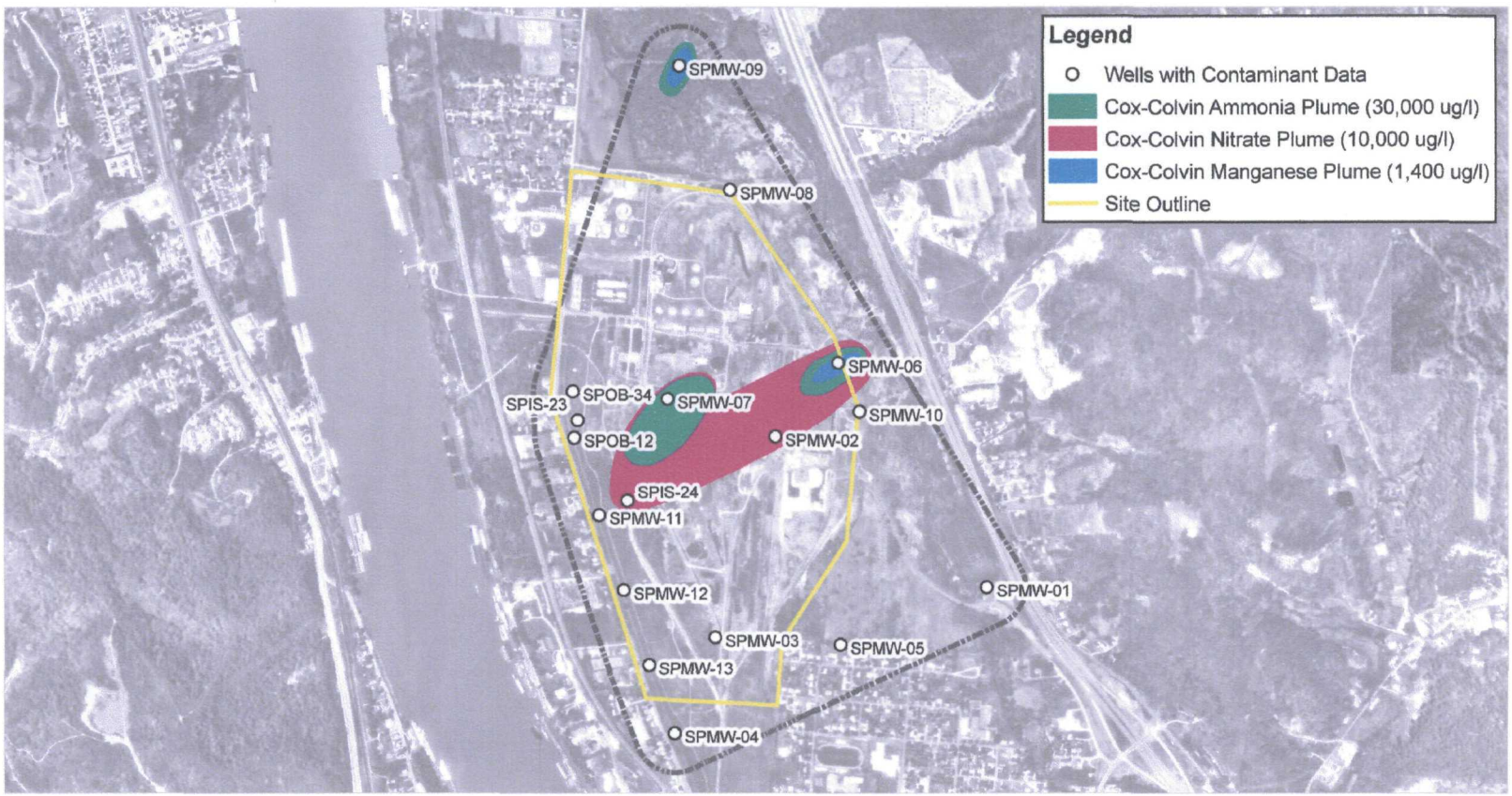
Cox-Colvin Target Zone

Groundwater Plume Geometry (October 2003):
Ammonia at 30,000 ug/l, Manganese at 1,400 ug/l, and Nitrate at 10,000 ug/l

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592



N

0 380 760 1,520 2,280 3,040 Feet

Figure 3

NOTES: Cox-Colvin Plume Geometry (October 2003) was copied from Annual Groundwater Monitoring Report (Year 2003), South Point Plant Superfund Site Remedial Action, South Point, Ohio. Plumes were rotated and scaled to be in line with UTM NAD83 Zone 17 coordinates.

GEOS
Groundwater Evaluation and Optimization System

Ammonia Target Zone

2D Max Plume Estimate for Ammonia at 30,000 ug/l

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592

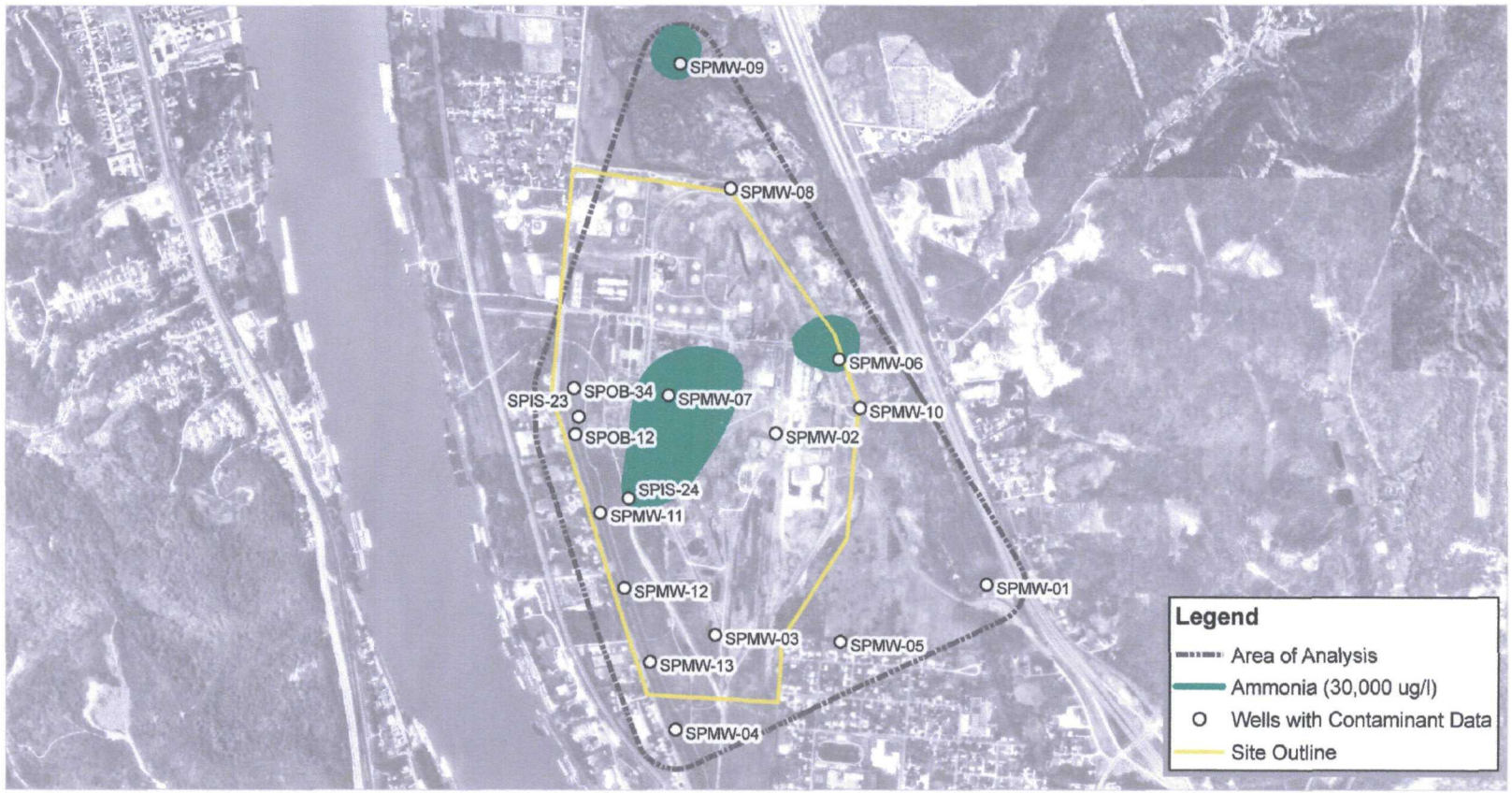


Figure 4

NOTES: 2D Max Plume Estimate determined using the Upper Confidence Limit (UCL) for the 4 most recent samples (typically data from 4/2004 through 10/2005).

GEOS
Groundwater Evaluation and Optimization System

Manganese Target Zone

2D Max Plume Estimate for Manganese at 1,400 ug/l

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592

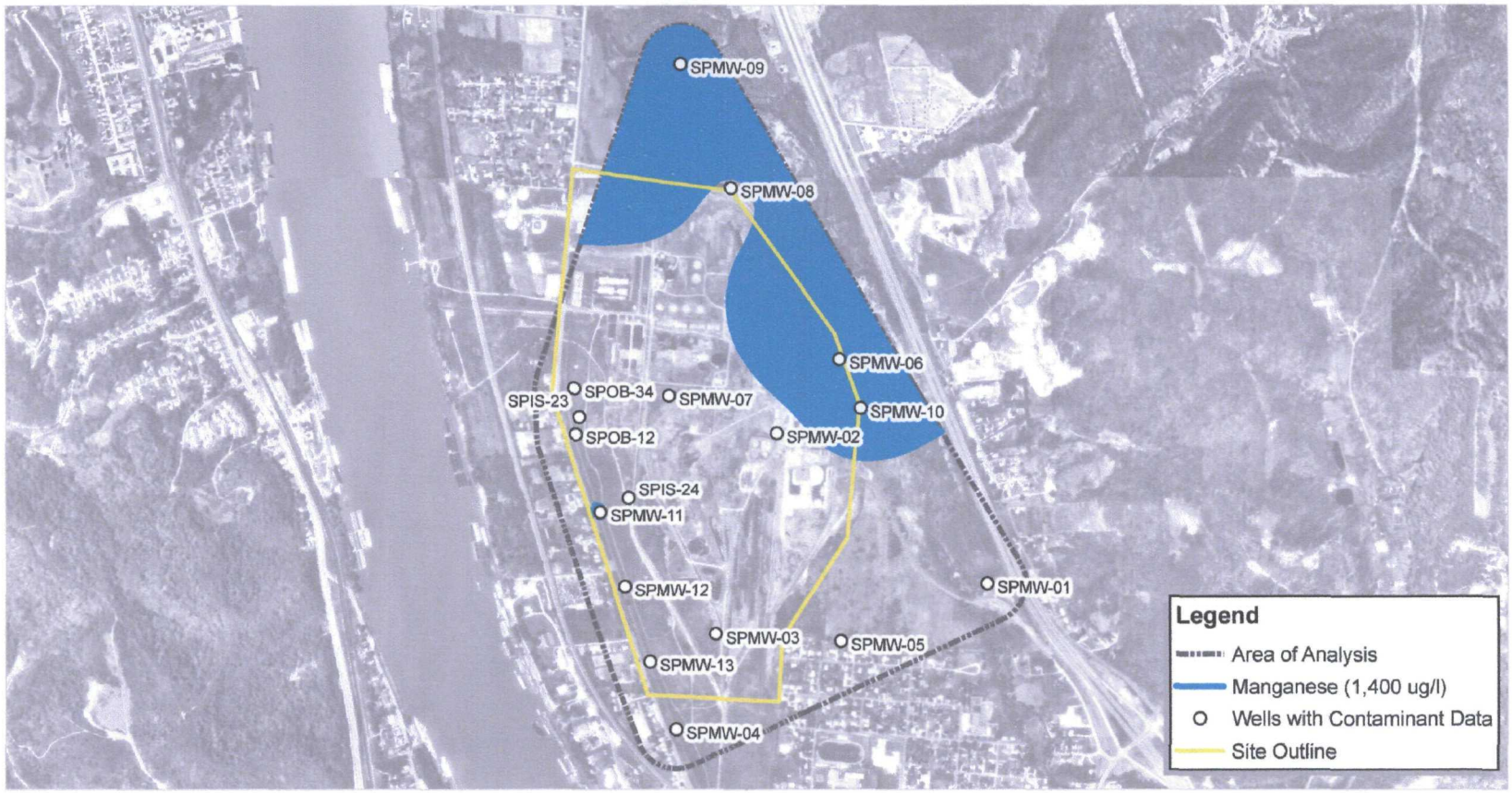


Figure 5

NOTES: 2D Max Plume Estimate determined using the Upper Confidence Limit (UCL) for the 4 most recent samples (typically data from 4/2004 through 10/2005).

GEOS
Groundwater Evaluation and Optimization System

Nitrate-Nitrite Target Zone

2D Max Plume Estimate for Nitrate-Nitrite at 10,000 ug/l

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592

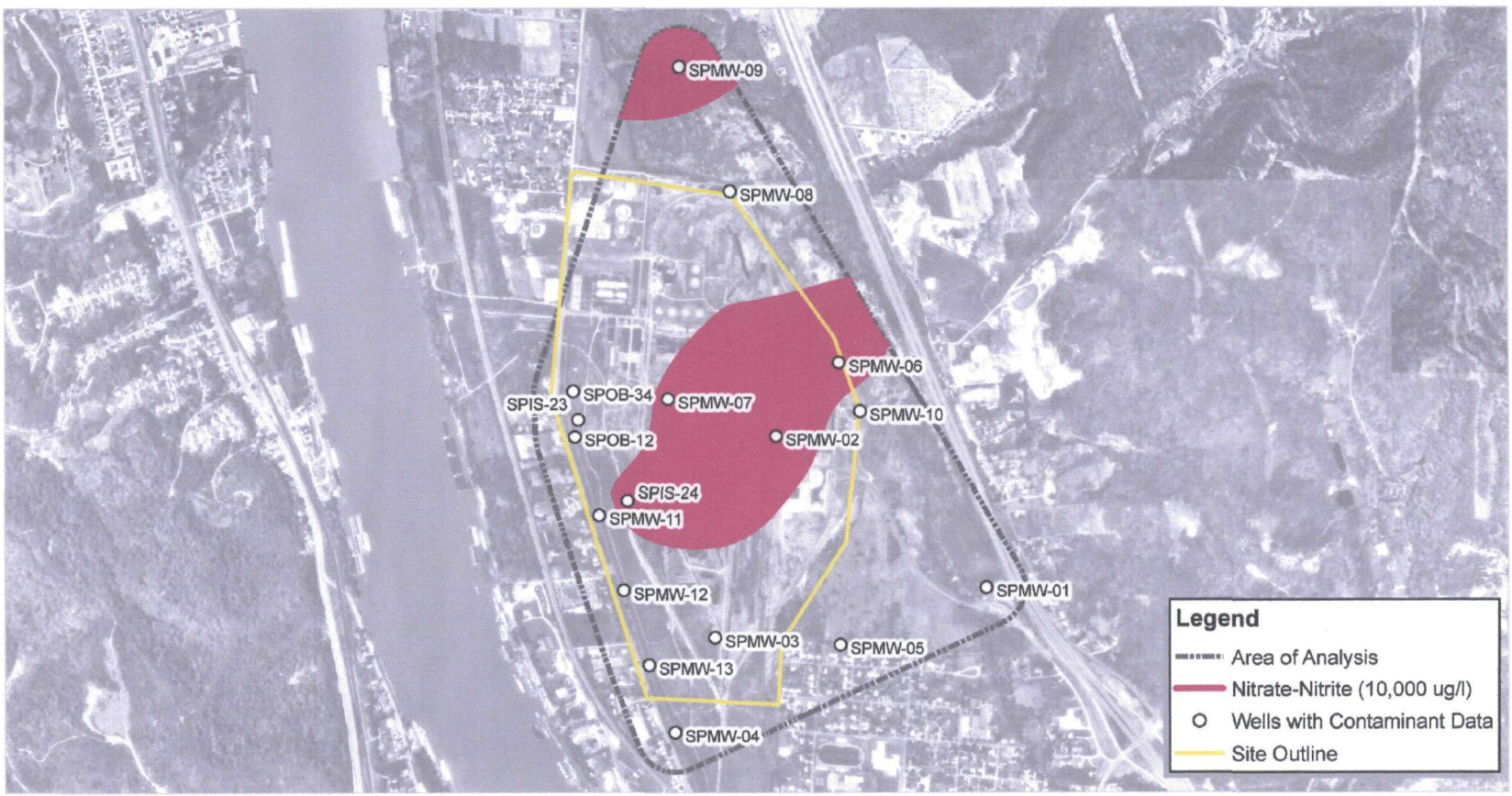


Figure 6

NOTES: 2D Max Plume Estimate determined using the Upper Confidence Limit (UCL) for the 4 most recent samples (typically data from 4/2004 through 10/2005).

GEOS

Target Zone Components

2D Max Plume Estimates for 3 COCs at Clean-up Standards:
Ammonia at 30,000 ug/l, Manganese at 1,400 ug/l, and Nitrate-Nitrite at 10,000 ug/l

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592

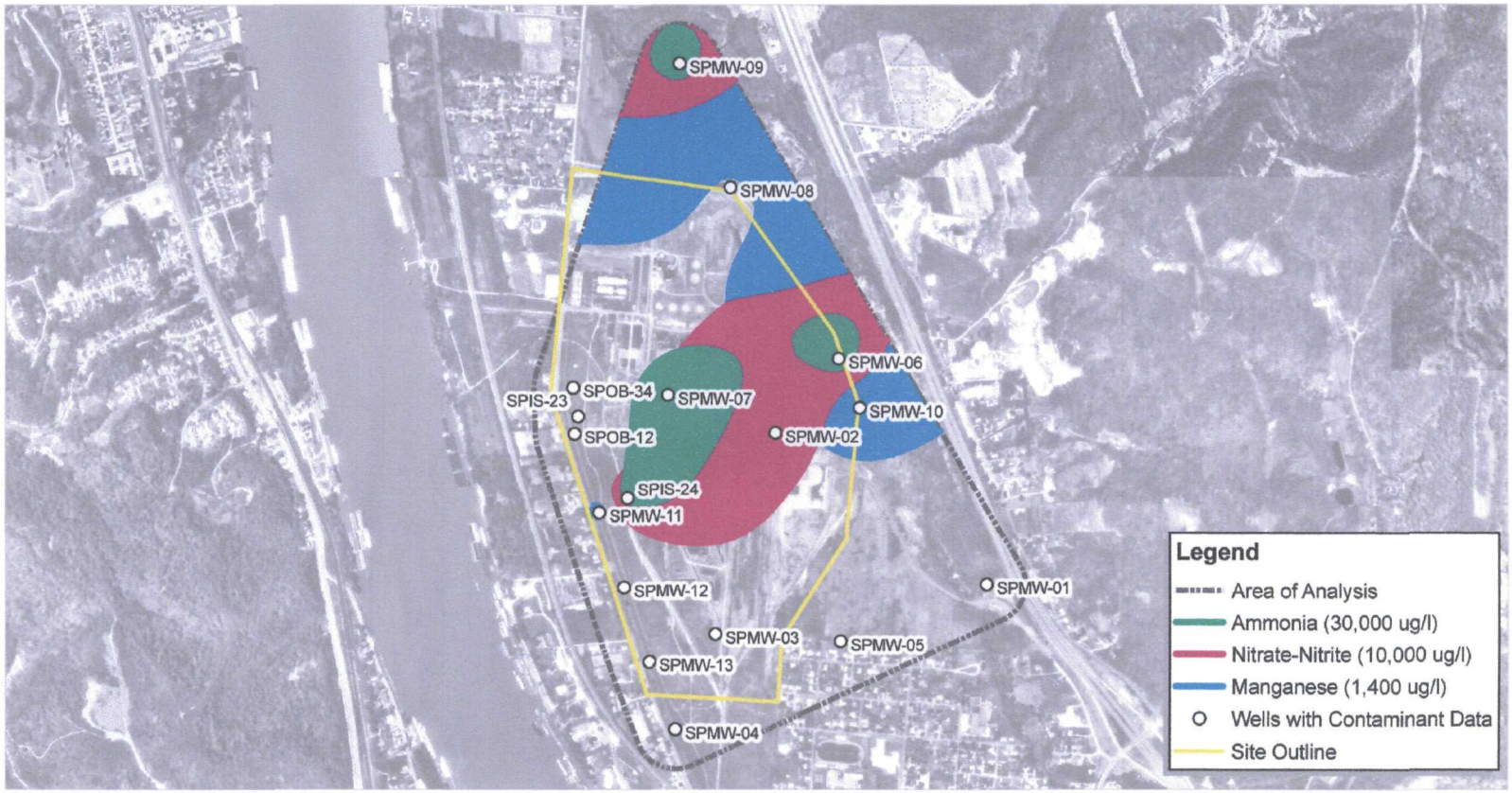


Figure 7

NOTES: 2D Max Plume Estimate for each listed contaminant was determined using the Upper Confidence Limit (UCL) for the 4 most recent samples (typically data from 4/2004 through 10/2005).

GEOS

Target Zone

2D Max Plume Estimate for Combination of 3 COCs at Clean-up Standards:
Ammonia at 30,000 ug/l, Manganese at 1,400 ug/l, and Nitrate-Nitrite at 10,000 ug/l

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592

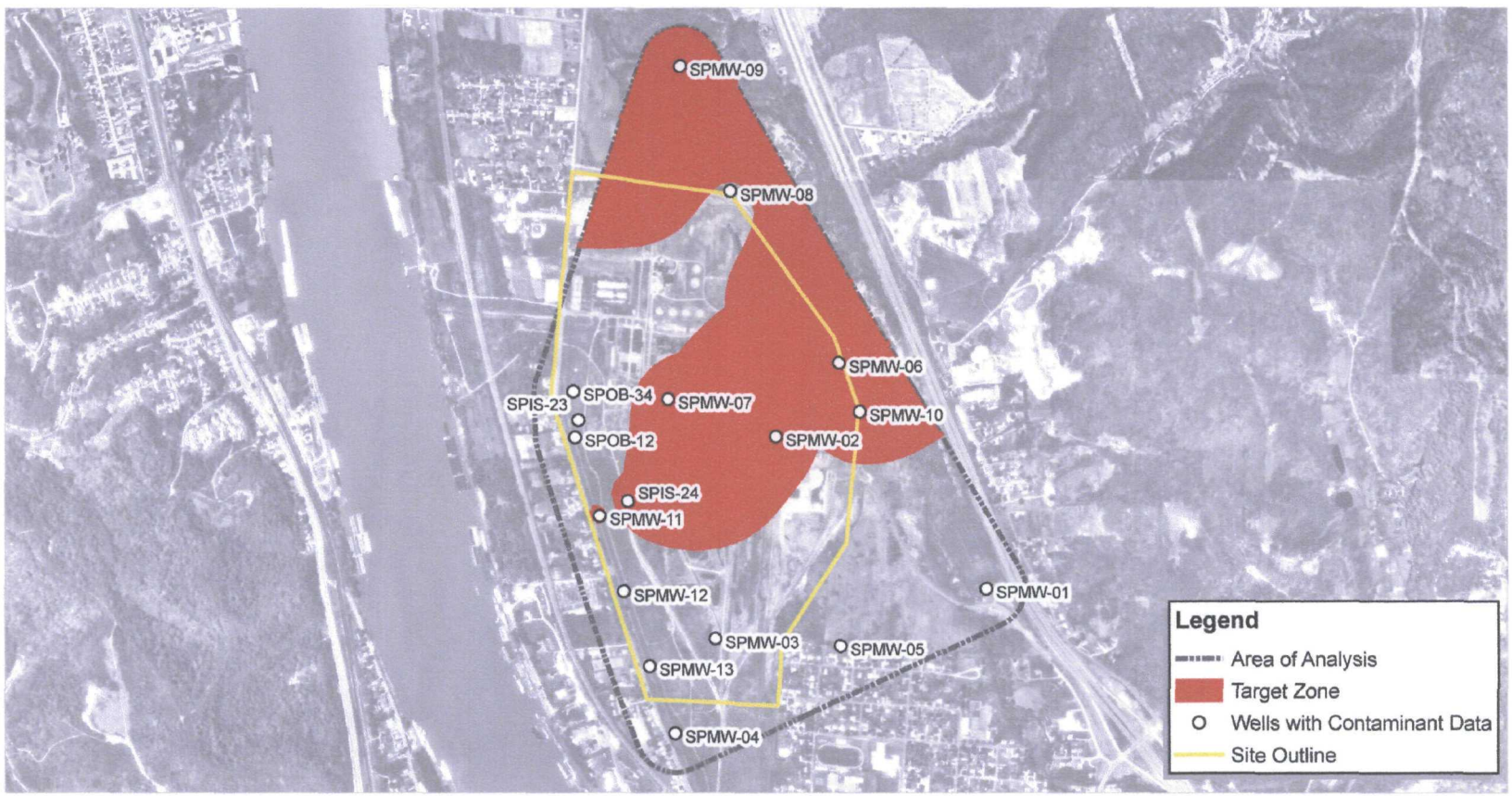


Figure 8

NOTES: 2D Max Plume Estimate for each listed contaminant was determined using the Upper Confidence Limit (UCL) for the 4 most recent samples (typically data from 4/2004 through 10/2005).

GEOS
Groundwater Evaluation and Optimization System

Target Zone Comparison

Cox-Colvin Groundwater Plume Geometry (10/03 Data) vs. GEOS Target Plume Estimates (4/04 - 10/05 Data) for Ammonia, Manganese and Nitrate

Superfund
U.S. Environmental Protection Agency

South Point Site

EPA ID# OHD071650592

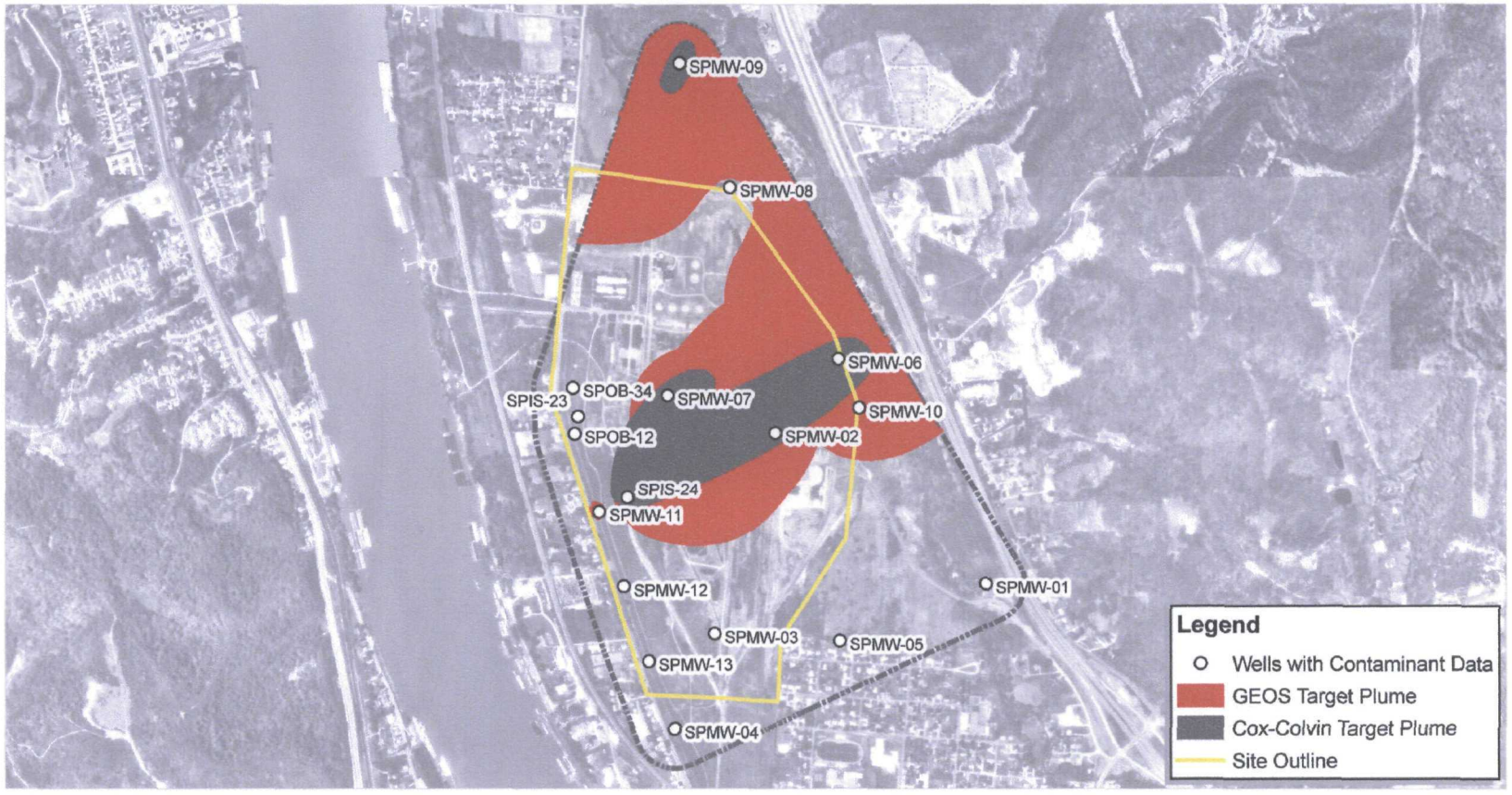


Figure 9

NOTES: GEOS Target Plume was constructed from the 2D Max Plume Estimate for each listed contaminant using the Upper Confidence Limit (UCL) for the 4 most recent samples (typically data from 4/2004 through 10/2005). Cox-Colvin Target Plume was copied from the Plume Geometry (October 2003) in the Annual Groundwater Monitoring Report (Year 2003), South Point Plant Superfund Site Remedial Action, South Point, Ohio. *Cox-Colvin plumes were rotated and scaled to be in line with UTM NAD83 Zone 17 coordinates.*

GEOS
Groundwater Evaluation and Optimization System

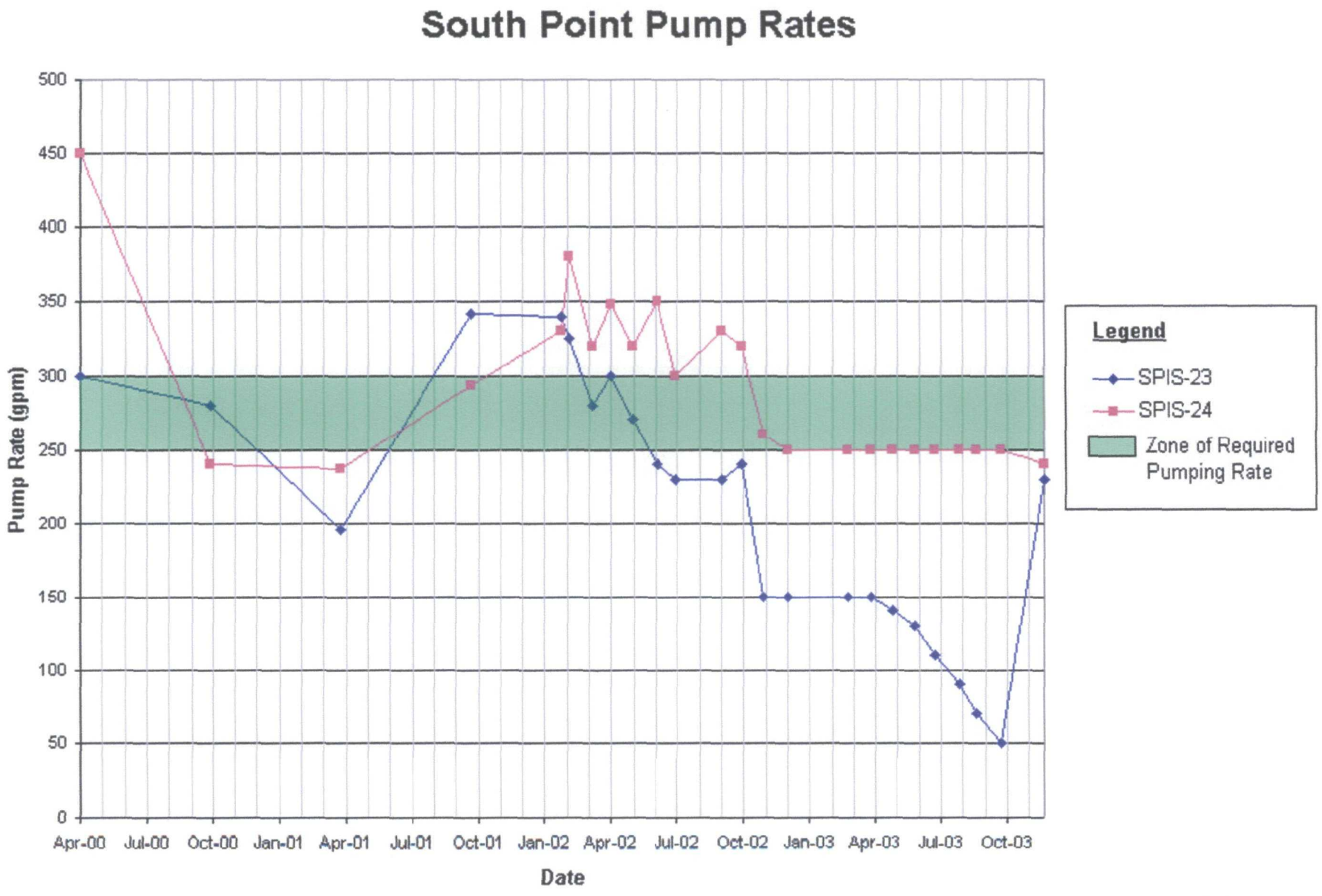

South Point Pump Rates
Pump Rate (gpm)
500
450
400
350
300
250
200
150
100
50
0
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Date
Legend
SPIS-23
SPIS-24
Zone of Required Pumping Rate

Figure 10

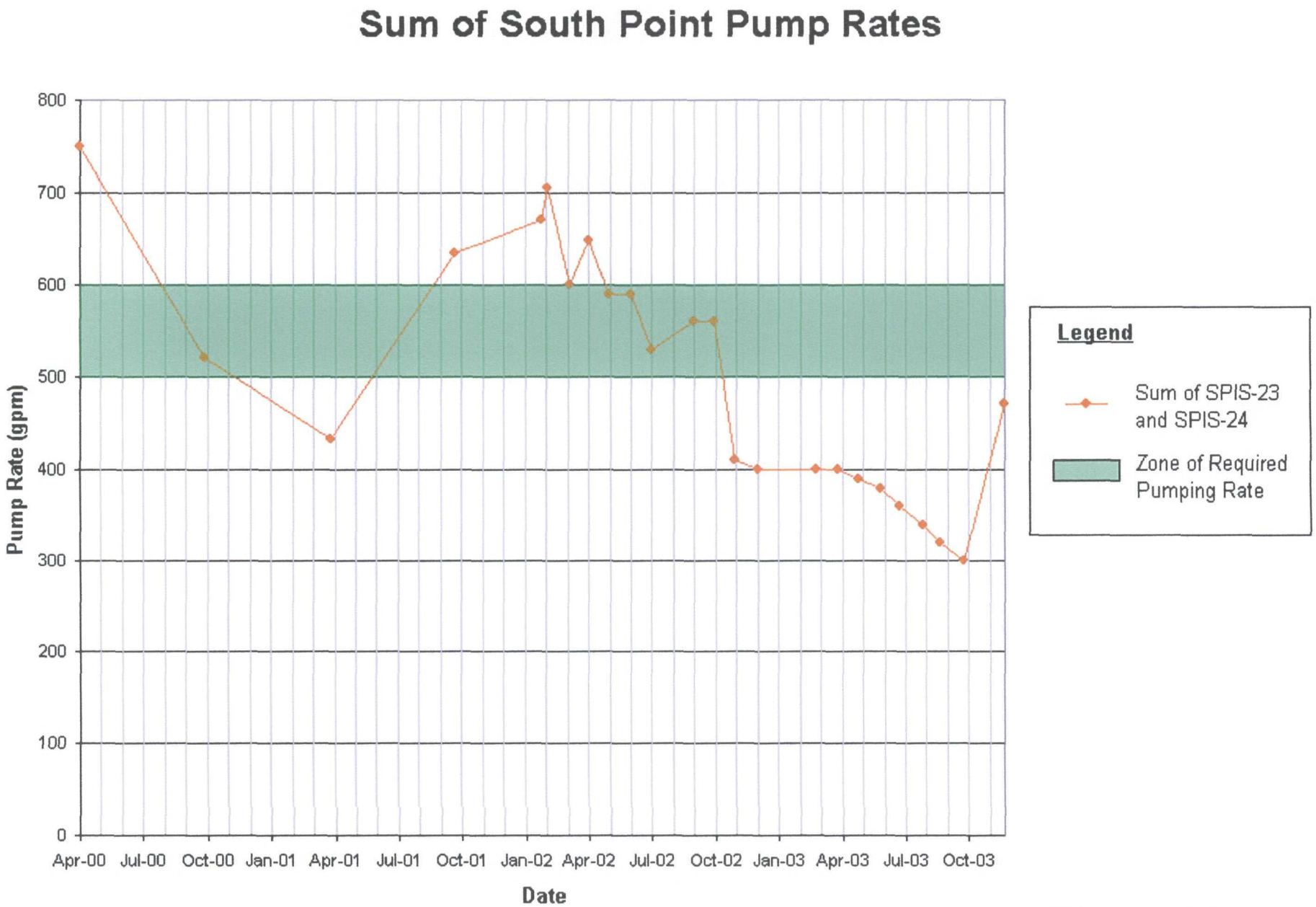

Sum of South Point Pump Rates
800
700
600
500
400
300
200
100
0
Pump Rate (gpm)
Apr-00
Jul-00
Oct-00
Jan-01
Apr-01
Jul-01
Oct-01
Jan-02
Apr-02
Jul-02
Oct-02
Jan-03
Apr-03
Jul-03
Oct-03
Date
Legend
Sum of SPIS-23 and SPIS-24
Zone of Required Pumping Rate

Figure 11